# EUROPE VOL 1. THE PENINSULA



B.C. WALLIS, B.Sc.



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#### STANFORD'S COMPENDIUM

OF

# GEOGRAPHY AND TRAVEL

(NEW ISSUE)

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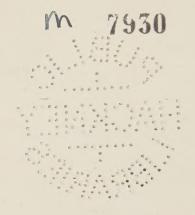
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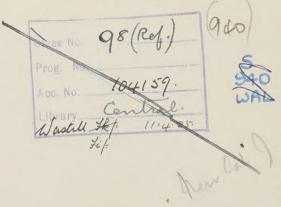
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#### PREFACE

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EACH continent has its own individuality. Certain differences of treatment may therefore be expected even in the volumes of the same series dealing with the several continents. The individuality of Europe is shown first in its variety of outline and diversity of physical features. Both of these circumstances have contributed to promote a certain amount of individualisation in the separate parts, but, on the other hand, have served to bring about between those parts an intimate action and reaction, which has given to the whole a common history. The result is seen in the fact that the continent is occupied by peoples with different languages and institutions, but, for the most part, a common religion and in nearly the same stage of civilisation.

In the present volume I have endeavoured to mark the individuality of the continent by an attempt to indicate in some small degree the unity in its history, and the mode in which situation, climate, and physical features have contributed to that unity. As the importance of towns is an index of the state of development of the regions and countries to which they belong, it is chiefly in the sections under this heading that the attempt referred to has been made.

I am indebted to Mr. J. T. Bealby, B.A., formerly on the staff of the *Encyclopædia Britannica*, and afterwards on that of *Chambers's Encyclopædia*, for the preparation of the chapters on the Balkan Peninsula, the Iberian Peninsula, and Rumania. From the original edition of this work I have retained as much as the change of plan and lapse of time permitted.

GEO. G. CHISHOLM.

September 1899.

I have attempted to retain the many excellent features of the earlier edition of this work while taking note of the changes which have occurred during the last quarter of a century. It was inevitable that much of the work should be re-east.

B. C. WALLIS.

September 1924.

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#### POLITICAL MAP OF EUROPE





#### 1. Situation, Boundaries, and Outline

It is the course of history rather than the nature of its geographical features that has caused the portion of the earth's surface to which the name of Europe is given to be regarded as a separate division of the land, with the rank of a continent. Historical developments, and the resultant social and political contrasts between it and the adjoining continents, have made this point of view so inevitable that it would be impossible to degrade Europe from its position. The mere fact that this division of the globe contains one of the two great world nuclei of population, bounded by practically uninhabited areas and distinguished by specific racial characters, implies reasons sufficient for considering it by itself as a distinct rival of the other land-masses holding the dignity of continents. Yet when we regard it strictly from a geographical point of view, it is important to bear in mind that Europe is, after all, only a peninsula of Asia Physical configuration, climate, the character of the vegetable and animal life,

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are all circumstances that bring the continuity of Europe and Asia so much into prominence that the term Eurasia has long been customerily adopted as a designation

for Europe and Asia combined.

For the reasons just indicated, there is always something more or less arbitrary in fixing the boundaries between Europe and Asia; and usually these boundaries are the result of a compromise between physical and political considerations. In the north-east the Ural Mountains seem to form a sufficiently satisfactory physical boundary; but we must note that this boundary is transgressed by the divisions of Perm and Orenburg, which belong politically to Russia in Europe. Farther to the south the Ural River is regularly taken as the boundary: yet this is in disregard of the entire similarity of physical features and ethnological characteristics on the two sides of what is really an unimportant river. In fact, while the Ural Mountains and the Ural River constitute a convenient line of demarcation between the two continents, it is important to observe that a better physical boundary is presented by that area of depression which is shown on our orographical map as beginning in the south-east to the west of the Caspian Sea, and which is continued on the other side of the higher ground at the southern end of the Urals, northwards through Siberia at a higher level along the valleys of the Tobol and the Ob, considerably to the east of the Ural Mountains. It is highly probable that at one time the whole of this area was invaded by the sea, and Europe thus completely severed from the Asiatic continent.

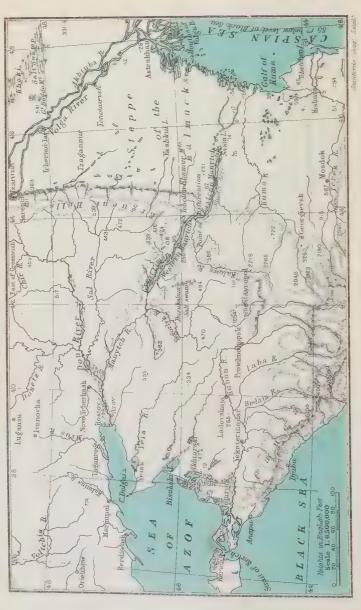
In the extreme south-east the water-parting of the Caucasus Mountains is often taken as the boundary between Asia and Europe; but, for both political and



### PHYSICAL MAP OF EUROPE







London - Edward Stanford, Ld., L., E. & Pt., Long Acre, W.

physical reasons, it is much more convenient to adopt as the dividing-line that depression which is traversed by the Manytch, a tributary of the Don. It is this that will be assumed as the boundary in the present work, as it is also in the volume on NORTHERN ASIA, in which will be found an account of all the political divisions of the Caucasus.

While Europe is, next to Australia, the smallest of the primary divisions of the earth, no other great section of the globe can compare with it either in the variety of its configuration or in the relative extent of its outlines. It has been estimated by Strelbitsky that the coast-line of the European continent, exclusive of the islands, measures as much as 47,790 miles, which gives a ratio of 1 mile of coast to about 75 square miles of area.

The advantages which this structure presents as a means of facilitating commercial intercourse hardly need to be pointed out; but it is a no less important consideration that the varied outline of Europe, together with its diversity of surface, has given rise to several centres of civilisation, independently developed in their physical seclusion from intervening regions. For nowhere else do we meet with such marked peninsular formations, no vast uninterrupted tracts of land occurring anywhere except in the east. And these very eastern regions are almost entirely inhabited by several branches of one great people, the Russian Slavs; while all the other European peoples are crowded together in what remains of the continent.

<sup>&</sup>lt;sup>1</sup> This includes minute indentations. Other estimates of coast-line, more or less disregarding minute indentations, vary from 19,500 to 26,700 miles.

# 2. European Seas—Physical History of the Mediterranean, etc.

As a consequence of the varied outline of Europe, and of its situation with regard to Asia and Africa, it has both on the north and on the south a number of landlocked or nearly landlocked seas. In the south there is the Mediterranean, with its gulfs and communicating seas; in the north, the Baltic and its gulfs, and the more open North Sea.

The Mediterranean,—from the most ancient times a mighty high-road of civilisation in the strictest sense, the water-way between the nations dwelling on its shores, north and south, east and west, now also part of the great highway between Europe and eastern Asia,—is of all these the most important. No other sea, indeed, has hitherto played a more brilliant or more weighty part in the history of mankind. It was the "Great Sea" of the sacred writers. By the ancient Romans it was sometimes familiarly termed Mare Nostrum, "Our Sea," and sometimes Mare Internum, "the Inner Sea," to distinguish it from the great ocean that lay outside "the pillars of Hercules," or the two rocks on opposite sides of the Strait of Gibraltar. Some of the names of its different parts still speak of the history of the peoples on its shores. The Ionian Sea points back to the time when the islands on the south-west of the Balkan Peninsula were settled by Ionian Greeks; while the Tyrrhenian Sea still preserves the Greek name of Etruria. The term Adriatic even indicates something of the physical history which the sea has passed through within the memory of man, for it is derived from the town of Adria or Hadria, which, in the days when it was a great seat of Etruscan trade, stood upon its shores, but now lies buried under sediment some 14 miles inland, a little to the south of the modern town of that name.

But the more remote physical history of this basin is of still greater interest, and worthy of careful examination.

Let any one consider Europe and Asia as a whole, and he will find that the Black Sea, the Sea of Marmora, and the Mediterranean lie in a western continuation of the great area of inland drainage of central Asia, which extends eastwards for a distance of about 3000 miles from the plains bordering the Caspian Sea on the west. The Black Sea is upwards of 6000 feet deep where deepest; while the Sea of Marmora, which discharges its waters into the Mediterranean through the Dardanelles, is 4600 feet in depth.<sup>1</sup>

Southward and westward of the Black Sea lies the Mediterranean, the largest sheet of inland water in the world. Its length is about 2300 miles, and forms three distinct basins, each of great depth. The eastern basin lies between the coasts of Syria and Sicily, and is about 1200 miles long, nearly the whole being more than 5000 feet deep, attains depths of from 9600 to 11,000 feet between Africa and Asia Minor, while the greatest depths sounded by various expeditions are 12,276, 12,660, and 13,320 feet.

The middle basin lies south of Sicily, and is about 200 miles in length, the whole being over 2000 feet deep, while its greatest depth between Malta and Pantellaria, as given by Admiral Spratt, is 4200 feet.

The western Mediterranean basin is about 980 miles in length. Where deepest, about midway between Sardinia and Naples, the sounding line has sunk to 12,240 feet (2040 fathous). Here are the large islands of Sardinia

 $<sup>^1</sup>$  S.W. of the Prince's Islands (Kizil Adalar). Krümmel, in Geog. Jbuch. , xx. p. 208.

and Corsica and the smaller group of the Balearic Isles, a connecting link between the mountains of Southern Spain and the Alps. Here also is the chief area of volcanic activity in Europe—Stromboli, Vesuvius, and Etna.

In studying the history of the comparatively shallow outlet of the Mediterranean, we find that there is geological evidence tending to show that it has been subject to various oscillations. At a recent period in the earth's history—probably during one of those interglacial episodes when a mild climate intervened between periods of Arctic severity—the outlet was closed. An isthmus of land then connected Europe and Africa at this point, allowing of the passage into Europe of various African mammals (the Rhinoceros leptorhinus, African lynx, spotted hyæna, etc.), whose remains have been found in fissures and caves in the limestone rock of which Gibraltar is mainly composed. Subsequently this isthmus was again submerged, and with it the rock of Gibraltar (see frontispiece), to the depth of at least 700 feet, and then again there followed a re-elevation, which probably at one time reached such a height as to permit of a second immigration into Europe of African mammals.

The question thus arises, What effects have these oscillations of the relative levels of land and sea produced on the history of the Mediterranean?

If we consider the relation of the three Mediterranean basins and their soundings to the closing of that sea by upheaval of the above-named opening, it becomes obvious that, had the upheaval been sufficient also to uplift the comparatively shallow area between Sicily and Tunis, that which is now one long inland sea must then have presented the spectacle of three large salt lakes, comparable in their nature to the Caspian, the Black Sea, and the Sea of Marmora, the whole being then, even more

obviously than now, a mere western prolongation of the area of inland drainage of central Asia.

The eastern lake between the coasts of Syria and Sicily must have covered an area much more than twice as large as the present Caspian Sea, and south of the present coast of Sicily lay the second lake-basin, which, as shown by Admiral Spratt, somewhat resembled, both in form and size, the Sea of Marmora. Like that sea or salt lake, it also communicated with the more eastern lake by a narrow gorge 1740 feet deep where shallowest, and comparable to the Bosporus, through which the water of the Black Sea now flows as a rapid salt river to the Sea of Marmora; while at its north-western end it communicated by a long narrow channel with the western basin that lies between Italy and the Strait of Gibraltar. This channel, which is now 1270 feet deep where shallowest, is aptly compared by Admiral Spratt to the salt stream of the Dardanelles, for they are much the same in length and breadth, and in each case the soundings rapidly deepen outside their two ends.

The narrowness of the strait by which the Mediterranean communicates with the Atlantic causes the inland sea to be in a large measure independent of the ocean as regards those circumstances which affect the physical conditions of the water. The Nile is the only river with a large basin drained directly into the Mediterranean, and owing to the scantiness of the rains in the greater part of the area of that basin, the amount of water which the river pours into the sea is small in proportion to the extent drained. Moreover, the rainfall of the Mediterranean region generally is small, especially in summer. The consequence is that throughout the Mediterranean evaporation greatly exceeds the gain of water by influx and precipitation, and its water is consequently much salter

than that of the open ocean. The average salinity of the ocean is under 35 parts per 1000 (common salt making up about 27 parts), but the salinity of the Mediterranean exceeds 37, and in certain parts 39 per 1000. The salinity of the surface waters of the Ionian Sea is from 38 to 38.5 per 1000, nearer the African coast it reaches 38.8, in the Syrian Sea it exceeds 39.1

This difference is accompanied by a difference in specific gravity which leads to the superficial inflowing current being partially counterbalanced by a deep-sea outflowing current across the submarine ridge that shuts off the Mediterranean from the Atlantic. It is no doubt in consequence of this counter-current that a higher specific gravity is found at a depth of 350 fathoms than at the surface west of the ridge (1.0285 as against 1.0270); but there is more direct evidence of the existence of such a current in the fact that in 1712 a ship that foundered between Tangier and Tarifa was cast ashore a few days later about 5 leagues farther to the west. At the eastern end of the basin similar conditions prevail. From the Black Sea, where the influx of fresh water is in excess, a surface - current enters the Mediterranean through the Bosporus, but, as shown by the explorations of the Shearwater in October 1872, a strong deep-sea current flows into the Black Sea.2

The Mediterranean does not share in the Atlantic tides. The great inland sea is not, however, absolutely tideless, as has often been asserted. It has tides of its own, though small ones. At few places on its shores

<sup>&</sup>lt;sup>1</sup> Results obtained by the *Pola* expedition of 1891. See *Geog. Jbuch.*, xviii. pp. 198, 199, and the reports there referred to, *Deukschriften der K. K. Akad. d. Wiss. in Wien*, vol. lx. (1893), part viii. and vol. lxi. (1894), part xii.

<sup>&</sup>lt;sup>2</sup> O. Peschel's *Physische Erdkunde*, ii. 104, 105. See also *Scot. Geog.* Mag. 1887, pp. 77-80.

does the height of the tide exceed 2 feet, though near Venice it sometimes reaches 3 feet. At the Island of Zante it is no more than 6 inches.<sup>1</sup> The feeble tides are frequently masked by local surface currents due to the winds.

Such is a brief account of the past history and present state of the Mediterranean area; but something remains to be said respecting the physical origin of the inland basin in which its waters lie.

When we examine a geological map of Europe and the north coast of Africa, we observe that the Mediterranean area on the north side of the sea consists to a great extent of Miocene or Middle Tertiary and Pliocene or Upper Tertiary strata, and the same is the case with the land around the Sea of Marmora and the Black Sea, the Crimea, the shores of the Sea of Azov, and part of the west coast of the Caspian. Where Pliocene beds form the coasts they often merely conceal Miocene strata that underlie them. In like manner the Balearic Isles, Corsica and Sardinia, Gozo and Malta, also contain Miocene strata; Malta and Gozo being entirely formed of these, while Cyprus, Crete, and parts of Greece are partly formed of the same kind of rocks. In like manner the north of Africa at and near the sea between Tunis and Tangier, largely consists of Miocene formations, which form part of the mountain district south of Oran and Algiers, and extend to the flanks of the farther Atlas.

Considering that on the mainland of the Mediterranean region the Miocene strata are fragmentary, and that the same is also the case in the islands (this fragmentary condition being the result of time and widespread denudation), it is not too much to assume that

<sup>&</sup>lt;sup>1</sup> K. E. A. von Hoff, Geschichte der natürlichen Veränderungen der Erdoberfläche, Gotha, 1834, vol. iii. p. 256 (cited by Peschel).

a very great part of that area was once occupied by Miocene rocks, which, before the Mediterranean came into individual existence, formed a long and broad flat-lying land, of which Malta and parts of the other Mediterranean islands survive as fragments. By and by a gradual sinking of this vast area began, apparently simultaneously with that of the subsidence of the Asiatic area of inland drainage (first explained by Pallas), of which, as already stated, the Mediterranean area is a western prolongation.

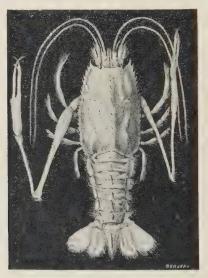
It is a fact well known to geologists that, after the close of the Eocene or Lower Tertiary epoch, the Pyrenees, the Alps, and the Carpathian Mountains underwent one of those last and greatest upheavals, which raised them into chains of the first European magnitude. The Miocene epoch of the European area was a period of repose, except for the occurrence here and there of ordinary volcanic phenomena, accompanied by minor oscillations of the level of the land in relation to the sea. But in the area under review this epoch was brought to an end by a renewed upheaval of the Alps, the Pyrenees, the Caucasus, and other mountain regions already named. So important was this event, that the thick flat-lying consolidated Miocene rocks which flanked the bases of the older Alps on both sides were, together with these mountains, heaved in places thousands of feet above their former level. Even at the present day they are found on the Rigi, for example, at the height of nearly 6000 feet above sea-level; but when we remember how much they must have since lost by degradation, we must conclude that the Alps and the other mountain ranges mentioned, must, at the beginning of post-Miocene times, have been prodigiously higher than they now are; and the amount of depression that the Mediterranean area underwent must have been commensurate, so to speak, with the great height to which the Alps, the Pyrenees, and other mountain ranges were upheaved in post-Miocene times.

The same kind of minor Miocene mountains adhere to the flanks of the Pyrenees and the Caucasus, and also to the other mountain regions already named, including the Atlas south of the Mediterranean; and indeed these remarks are equally applicable to the Himalayan range, which, after a prodigious upheaval in post-Eocene times, underwent, like the Alps, a second and post-Miocene elevation of great amount, as witnessed by the Siwálik hills on the southern flanks of the chain.

These facts easily lead us to the consideration of the gradual sinking of the great Asiatic area of inland drainage, which was the cause, or rather the complement, of the last great upheaval of the Himalayan range. A consequence of this depression of the land was, that an old Asiatic Mediterranean was formed in a basin, the relics of which still remain in the vast area of inland drainage, the proximate limits of which, from the Black and Caspian Seas eastward, have been insisted on by Sir Roderick Murchison, in his work on Russia and the Ural Mountains. In like manner, and if possible even more obviously in the opinion of some authorities, the gradual sinking of the Mediterranean area by degrees produced, first, the three great and deep inland salt lakes already described, and afterwards, by further depression of the area, a vast inland sea, which, in time, by the submersion of the Strait of Gibraltar, admitted the inward rush of the waters of the Atlantic Ocean.

Finally, it may be pointed out that the deep-sea fauna of the Mediterranean has apparently been influenced by the physical history and by some of the present physical conditions just described. That fauna is surprisingly

scanty, though recent explorations have shown that it is not quite so scanty as was at one time believed to be the case: they have proved also that the deep-sea forms of the Mediterranean are the same as, or allied to, those of the abyssal regions of the open ocean. Among other forms, the crab Willemæsia and the silicious sponge Hyalonema, both characteristic of the depths of the

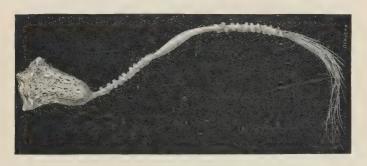


WILLEMESIA.

ocean, have now been dredged up from the bottom of the Mediterranean.<sup>1</sup> The poverty of the Mediterranean deep-sea fauna generally has been accounted for by supposing that it is due to the want of free oxygen in the depths of that sea. In the open ocean it has been shown that the surface polar waters, after getting

<sup>&</sup>lt;sup>1</sup> See La Scoperta di una Fauna abissale nel Mediterraneo, by Professor Enrico H. Giglioli: Rome, 1881.

oxygenated through their contact with the atmosphere, gradually sink in lower latitudes to the bottom, and then creep along the bottom towards the equator. But the situation of the Mediterranean is such as to exclude these abyssal waters. The submarine ridge at its mouth would probably in itself be sufficient to exclude them, but they are all the more effectually kept out by the effluent current that passes over the top of that ridge. The access of such abyssal oceanic forms as are found within it may possibly date from the periods when the bed of the



HYALONEMA.

Mediterranean was greatly depressed below its present level.

#### 3. The Western Coast-The North Sea

An arm of the Atlantic, forming the English Channel (La Manche, or "the sleeve," as the French call it, from its shape), divides the northern coast of France from the great group of the British Isles. These, however, once formed a part of the European mainland, from which they have been separated within a comparatively modern geological era. They lie in

very shallow waters covering a submarine plain which stretches on the one hand to the west of Ireland, and thence southwards through the Bay of Biscay to the neighbourhood of the Iberian coast, and, on the other hand, far across the North Sea. In the English Channel the depth of this submarine plain is mostly under 50 fathoms, sloping gently on the whole from that depth at the mouth or wider end to a depth of 20-30 fathoms about the Strait of Dover, the only deeper soundings (60-70 fathoms) being in a long narrow depression to the north of the Channel Islands known as Hurd's Deep.

An elevation of the North Sea to so moderate an extent as 100 fathoms would be sufficient to obliterate it entirely, save a narrow strip of deep water running round the south-western extremity of Norway which exceeds 400 fathoms in depth, the maximum sounding so far obtained being one of 442 fathoms in 58° 12′ N., 9° 30′ E.

Even in the shallower parts of the sea, however, there are marked inequalities in the bed. Shoals and sandbanks fringe the shores on both sides in the south, and between Norfolk and the coast of Norway lie two large sand-banks, the Dogger Bank and the Great Fisher Bank, each within 20 fathoms of the surface, and having alongside of them steep-sided depressions known as "pits." The presence of finely comminuted land-rocks amongst the sand and clay, mingled with minute remains of alge, foraminifera, and other marine forms, gives strong support to the idea that the higher parts of the bed are due to moraine deposits of the vast glaciers of the glacial period, to which a more detailed reference will be made in a future paragraph. It was only subsequent to that period that the North Sea, by denudation and subsidence of an old plain, rolled in, and thus severed Great Britain from the mainland. Even in historic times the North Sea has been at work modifying the outlines of the coast, and the work is still going on. The east coast of England annually suffers considerable waste by the action of the weather and the sea, and on the mainland of Europe the Dollart was formed in Friesland on 12th January 1277; and the Zuider Zee is due to a succession of irruptions spread over more than two centuries (1170 to 1395).

On the other hand, it is not to be forgotten that a process of an opposite kind is likewise going on. The whole area of the North Sea is being gradually filled up by the deposition of sediment. It has been pointed out that even the colour of the water shows that there is much more matter of a sedimentary nature always to be found in the waters of the North Sea than in those of the Atlantic: this is due not only to the fact that the former is by much the shallower, but also to this, that there is no escape in the latter for the tidal wave. The tides from the Atlantic enter the North Sea both by the Strait of Dover on the south, and by the wider opening on the north. The latter splits into two portions, the western which hugs the shallow British shores and the more rapid eastern section. The shallows of the Dogger Bank obstruct the tidal movement, and east of these shallows the two tides from the north and that from the south tend to obscure one another.

In the English Channel very high tides prevail on the south shores (St. Germain, 42 feet; Granville, 37 feet), and low tides on the north (Exmouth, 12 feet; Bridport, 11 feet; Poole, 6 feet), and near Beer Head is a point round which the tides move slowly in a circle without leading to any appreciable rise and fall; Southampton has a double high tide, due to the tidal action going, first, direct by the Solent, and secondly,

round the Isle of Wight and by Spithead into South-ampton Water.<sup>1</sup>

The North Sea is peculiarly rich in the lower forms of animal and vegetable life, which attract enormous numbers of food fishes, and crustaceans, and make the fisheries of this sea among the most valuable in the world. The eggs of all food-fishes, except the herring, skate, and ray, being small floating spheres, the direction of the surface currents has an important influence on their distribution, and investigations specially undertaken with this view have shown that, in the North Sea north of the parallel stretching from the coast of Lincoln to the Frisian Islands, there goes on a slow circulation of the waters southwards along the east coast of Great Britain from the Orkney Islands, then eastwards, and finally northwards parallel to the coasts of Schleswig-Holstein, Jutland, and Norway. This circulation, the mean rate of which is from two to three geographical miles per day, appears to be indirectly due to the action of the prevailing south-westerly winds heaping up the waters against the eastern shores of the sea.2

The Strait of Dover, a narrow connecting passage at the head of the funnel of the English Channel leading to the wider waters of the North Sea, has currents and tidal races which make the swimming of the Channel a great test of physical endurance.

## 4. The Baltic

The Baltie, the Mediterranean of the north, contrasts with the Mediterranean of the south, not merely in

See H. N. Dickson in Scot. Geog. Mag. 1893, pp. 17-28, with plates.
 See T. W. Fulton in Scot. Geog. Mag. 1897, pp. 636-645.

superficial dimensions, but also in depth. It is essentially a shallow sea. The greatest depth that has been sounded is 216 fathoms in a small depression east of the Island of Gotland, and its mean depth is only about 36 fathoms. Near the mouths of rivers which empty themselves into the Baltic the depth of water becomes greatly diminished by the accumulation of detritus, and many of the harbours are in constant danger of being silted up.

As regards its physical conditions, the Baltic presents in many points a contrast to the Mediterranean, the corresponding inland sea in the south. In consequence of the vast volumes of fresh water which are continually being poured into the Baltic, and the comparatively small amount of evaporation, the salinity is exceedingly low. As might be expected, the farther we penetrate into the Baltic the fresher is the water. Thus in the northern part of the Gulf of Bothnia the surface-water is almost fresh, while as we return southwards it becomes more and more brackish. There is a surface layer of about 50 metres (27 fathoms) in thickness, in

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<sup>1</sup> Greatest length 960 miles, greatest breadth 390 miles. The area depends on the limit taken as the western boundary. In Krümmel's calculations of the dimensions of the ocean basins the Baltic is taken as including the Dano-Rügen Sca (11,100 square miles), the Kattegat (8905 square miles), and the Skager-Rak (9475 square miles), and has assigned to it a total area of about 160,400 square miles, which Karl Karstens, in his Neue Berechnung der mittleren Tiefe der Ozeane (Kiel and Leipzig, 1894; p. 24), increases to about 166,400; but, according to Otto Pettersson (Scot. Geog. Mag. 1894, p. 617), "the real boundary between the North Sea and the Baltic from a hydrographic point of view is the broad and shallow submarine ridge between Falster and Möen and the coasts of Mecklenburg and Rügen. The circulation of the sea and the stratification of its waterlayers, as well as the distribution of temperature, assume different characters east and west of this line." If this boundary therefore be taken, the three minor areas above enumerated are omitted, and the whole area is reduced to about 137,000 square miles.

which the salinity is nearly uniform at any given season from top to bottom, the salts amounting to 7.8 per thousand near Bornholm, and only 6 per thousand near the Finland Skerries. Below that depth the salinity is greater, reaching 10.5 per thousand in the deepest The lowest temperatures are met with about the bottom of this layer of uniform salinity. Further, just as in the Mediterraneau the preponderance of evaporation leads to an inflowing current from the Atlantic, so here the preponderance of influx gives rise to an outflowing surface-current through the Belts into the Kattegat. Sometimes, it is true, the wind neutralises or even reverses this current; but under normal conditions it sets from the Baltic outwards. Beneath this outflowing current of light and comparatively fresh water there may, however, be detected a current of denser and salter water which sets towards the Baltic, just as there is an outflowing current in deep water at the Atlantic mouth of the Mediterranean. This deep backflow naturally retards the freshening of the waters. The outflowing current depends mainly upon the rivers; it is seasonal in character, since the rivers are ice-bound in winter and their discharge varies with the rainfall.

But there is one point in which the two seas correspond. As in the Mediterranean, so in the Baltic, tidal influence is felt to only a very small extent. At Copenhagen the difference of the tides is about 1 foot, while in the harbour of Wismar it does not exceed 3 or 4 inches; and as we advance far into the inland sea it becomes almost inappreciable. It is notable, however, that the Baltic waters are subject to changes of level corresponding to barometric variations, and similar to the seiches of the Swiss lakes.

As a consequence partly of the comparatively fresh

character of the water, and partly of the shallowness of the sea, the surface of the Baltic is very readily frozen, and many ports are ice-bound for at least a third of the year. During frosts of exceptional severity (as in 1323, 1459, 1709) the entire surface of the Baltic has been frozen over. In 1658 Charles X. of Sweden, returning from Poland to attack Frederick III. of Denmark, marched his army across the Belts; and in 1809 a Russian force passed from Finland to Sweden across the frozen waters of the Gulf of Bothnia. This gulf was again frozen over in 1875-76.

#### 5. The Northern Islands and Seas

Though in no way geographically connected with Europe, still there are generally included in this division of the globe certain islands which are situated in the North Atlantic and Arctic Oceans. Rising from a submarine plateau in the Mid-Atlantic, between Norway and Iceland, and distant some 200 miles from the northernmost point of Scotland, are the Faroe Islands, a group composed mainly of basaltic and other volcanic rocks.

A submarine ridge connects the Faroe Isles with the great volcanic island of *Iceland*, the last refuge of Norse legends, speech, and customs. Against North Cape, the northernmost extremity of Europe, and along the shores of this arctic section of the continent, surges the *Polar Sea* or *Arctic Ocean*, which washes the shores of several islands, including some of considerable extent, such as *Kaniskaia Zemlya* and *Kolguev*, two islands off the coast of Russia, between the mouth of the Pechora and the White Sea; while the group of *Novaya Zemlya* stretches

northward as far as latitude 75°. This group may be described as a northern continuation of the Ural chain, an intermediate step being represented by the island of *Vaigach*, which is separated from the Russian mainland only by the narrow channel called Yugor Strait.

North of Novaya Zemlya lies the archipelago of Franz-Josef Land, discovered by Payer and Weyprecht in 1874. This group of islands includes the most northern land yet discovered in European seas, one part of the group, known as Petermann Land, extending beyond 83° N. latitude. Due north of Scandinavia, and therefore to the west of Franz-Josef Land, is the archipelago of Spitsbergen, discovered by Barents as early as 1596. The other islands of the Polar Sea, which are usually regarded as northern satellites of the European continent, are of very slender interest. Between Spitsbergen and the Scandinavian mainland is Bear Island; and between Bear Island and Iceland there rises in mid-ocean the volcanic island of Jan Mayen.

#### 6. Relief of Europe

For a general idea of the relief of Europe the reader is referred to the physical map, and descriptive details will be found in the following chapters dealing with the divisions of the continent: hence in this place a brief notice will suffice. A glance at the map will reveal the fact that the orographical features of Europe are no less diversified than are the outlines of its coasts.

It will be observed, also, that, with the exception of the dividing range between Europe and Asia in the north-east, the mountains are confined to the north-west and the south, and that in the south the prevailing direction of the chains is from east to west, just as in the corresponding latitudes of Asia. Between these elevated areas the Great European Plain stretches from the narrow coastal lowlands on the west to the wide expanses of Russia in the east, and abuts for thousands of miles on the Arctic Ocean and the North Sea.

The highest and most important ranges of mountains in Europe, within the limits adopted for the continent in this volume, belong to the Alps, which cover a total area of about 90,000 square miles in the very heart of the continent, and just about midway between the Equator and the North Pole. They begin with the Maritime Alps, the lowest range in the group, partly in Italy and partly between that country and France, and sweep round first northwards and then eastwards through Switzerland into the Tirol and the adjoining provinces of Austria, where the last spurs spread out like the leaves of a fan. They consist of many successive and parallel chains. Where broadest, about the meridian of Verona, they extend over a stretch of about 160 miles. highest summits are in the middle ranges, those bounding the east and west part of the Rhone valley, where there are many peaks exceeding 13,000 feet in height. culminating point, as is known to everybody, is Mont Blanc in Savoy, which attains an elevation of 15,775 feet. A general character of the group is the extremely zigzag vertical outline of the ridges, owing to the great height to which the peaks rise above the average elevation of the chains. Of twenty-eight passes, crossed by regular carriage roads, between and including the Collo dell' Altare (the limit between the Alps and the Apennines) and the Brenner, six are under 5000 feet in height. two between 5000 and 6000 feet, eleven between 6000

<sup>&</sup>lt;sup>1</sup> See below, p. 61.

and 7000 feet eight between 7000 and 8000 feet and one the Stelvio above 9000 feet. In this respect the Alps present a contrast to the Pyrenees, in which most



SUMMIT OF THE STELVIO PASS.

of the passes are only slight notches in a remarkably regular ridge.

The mean Light of Europe has been variously

estimated. The particulars given in the note below <sup>1</sup> may be of interest.

#### 7. River Systems

Regarding the rivers of Europe, it is first of all worthy of note that their course is for the most part determined in conformity to the general disposition of the mountain systems. The rivers, as a rule, do not cut through the mountains, but flow on different sides of them towards different seas. The Alps and the Carpathians send forth great streams to the north and south, and the Danube, the greatest of the European rivers in respect of volume, the second in point of length, flows between these two mountain systems. The Pyrenees form the water-parting between France and Spain, the Urals between Europe and Asia, and the

<sup>1</sup> In the table here following, one pair of columns shows the estimates given by De Lapparent in his *Traité de Géologie*, 2nd edition, Paris, 1885, p. 63, the other pair the results of the recalculations made by Dr. Supan (see *Petermanns Mitteil*. 1889, pp. 17-19) on the method adopted by Dr. J. Murray in his paper "On the Height of the Land and the Depth of the Ocean" in the *Scot. Geog. Mag.* 1888. For other estimates see *Scot. Geog. Mag.* 1889, p. 616 (Von Tillo), and 1891, p. 385 (Heiderich):—

	DE LAPPARENT.		Murray-Supan.	
	Mètres.	English Feet (Round Numbers).	Mètres.	English Feet (Round Numbers).
Europe .	290	950	290	950
Asia .	880	2880	940	3080
Africa .	610	2000	620	2030
N. America	600	1970	610	2000
S. America	540	1770	610	2000
Australia.	360	1180	260	850

Apennines and the highlands of Scandinavia form those of their respective peninsulas. This arrangement of the rivers of Europe in obedience to the prevailing orographical features might be taken almost as a matter of course, yet it is a characteristic in which this continent contrasts more or less with all the others. In Asia the lofty ranges enclosing the great central and western table-lands are everywhere pierced by the great continental rivers, and the same is the case with the rivers of the Rocky Mountain region in North America; while in the eastern part of the latter continent the principal streams—the Potomac, the Susquehanna, and the Delaware—in their passage to the Atlantic, cut right across the highest ranges of the Alleghanies. Africa is described by Livingstone as an elevated plateau somewhat depressed in the centre, with fissures for the escape of the rivers; 1 and subsequent explorations have confirmed this description. Europe itself is not without minor exceptions to the rule just stated. The Elbe has to pierce the Erzgebirge before it reaches the north German plain. Danube may justly be said to divide the Carpathians at the Iron Gate, and the Transylvanian Carpathians are also intersected by one or two of the great tributaries of that river, such as the Aluta. Other minor exceptions to the rule will be noted in the subsequent chapters, but Europe presents no exceptions on a scale corresponding to what is observed in Asia, America, and Africa; and the Elbe is indeed the only European river of importance which traverses in its course a range of mountains of greater elevation than the water-parting of the district where it takes its rise

The facilities afforded to navigation by the rivers of Europe are of the highest importance, but they are of a

<sup>&</sup>lt;sup>1</sup> The Zambezi and its Tributaries, p. 5.

different kind from those presented by the great rivers of Asia and America. The configuration of the European continent does not allow of the development of rivers which can rival in magnitude and volume those of the land-masses just mentioned; and of the two longest rivers, the Volga and the Danube, one ends in an inland sea, and the other has its lower course obstructed by a rocky barrier and a deltaic distributory system at its mouth. The chief importance of the rivers of Europe in respect of their navigability is derived from the fact that the varied outline and configuration of the continent cause so many streams to reach the coast directly, thus giving access from many points at a longer or shorter distance inland.

For purposes of irrigation some of the rivers of southern Europe are also of great importance. South of the parallel of 40° N, the perennial streams become fewer and fewer, giving place to those which dry up in summer, and in some parts streams that might otherwise flow perennially are prevented from reaching the sea in summer through having their water drawn off to feed irrigation canals. Such, for example, is frequently the case in the south-east of Spain, where the irrigation works of the Arabs are still in a large measure maintained. But the most fully-developed system of irrigation in Europe is to be found north of the limit mentioned in the valley of the Po, where the abundant waters brought down from the Alps by the tributaries of that river are utilised with the utmost skill.

# 8. Lakes and Fiords of Europe

Another striking feature of the hydrography of Europe is the large number of lakes dotted over its surface. The central Alps are fringed both on the north and south by

series of lakes, those on the north having their surfaces at an elevation of from 1200 to 2000 feet above sealevel, while those on the south lie at a height of from 600 to 700 feet. In like manner in Scandinavia there is a still greater profusion of lakes, most of which lie in Sweden on the east side of the water-parting; while all along the north and west coasts of Norway the mountains are penetrated by a vast number of flords, long, steepsided, and deep in their upper reaches, but comparatively shallow at their mouths. This combination of fiord and lake scenery is in like manner well shown on the west coast and in the interior of the Highlands of Scotland, but on a smaller scale, proportionate to the more limited area of the country and the lesser height of its mountains. In England there are no true flords, but many lakes in the mountain regions of Cumberland and North Wales.

The lowland region between the White Sea and the Gulf of Finland is strewn broadcast with lakes, and so also is the north German plain south of the Baltic.

Now it is admitted on all hands that throughout these regions the surface was covered in Pleistocene times by vast thick sheets of ice which advanced and retreated at least three times, attaining their maximum extent during the second well-marked advance, when ice covered all the British Isles, except the part of England south of the Thames, and in the mainland of Europe reached southwards to the base of the Thuringian Forest, Erzgebirge, Sudetes, and northern Carpathians, as shown on the map facing p. 30. On the southern side of the Alps an independent sheet of glacier-ice passed down the valleys, and deposited terminal moraines far out in the valley of the Po. On the northern side of the Alps, this sheet attained still greater dimensions, spreading across the whole of the middle plateau of

Switzerland, and at least half-way across the range of the Jura, and far eastward to the neighbourhood of Linz, on the Danube; while to the west broad and thick branches of glacier-ice passed from Mont Blanc towards the valley of the Rhone; and all down the upper Rhone valley by Geneva a glacier pushed on to where Lyons now stands, and there deposited a great terminal moraine. It has been shown by M. Alphonse Favre that the thickness of the Rhone glacier above the delta of the river where it enters the Lake of Geneva was in places more than 5000 feet, and perhaps even this is an under-estimate.

The country between the higher Alps and the Jura is formed of Miocene strata, which to a great extent consist of sandstones and soft marls, while the Alps proper are formed of older and harder rocks. The post-Miocene upheaval of the Alps being of much older date than the great Glacial Epoch, there is every reason to suppose that, by the influence of rain and rivers, the greater valleys of the mountains had been to a very great extent scooped out before the beginning of the gradual growth and increase of the Alpine glaciers.

That there is some causal connection between the existence of the numerous lakes and fiords of those regions and these former ice-sheets is undisputed. In certain cases, moreover, the nature of this connection is universally recognised. Among the most important remains and evidences of this ice era are extensive moraine deposits, either in the form of bottom moraines or terminal moraines, and where such deposits abound, mostly where the ice-sheets were beginning to thin out, all admit that numerous lake-basins have been formed by inequalities in the deposition of such morainic matter. Lakes of this kind are characteristic of the north German

lake-plateau, and are generally of small size, and either roundish depressions, long and narrow basins, or broad shallow basins very irregular in outline lying in gently undulating ground. In some cases lake-basins undoubtedly of different origin have their limits partly determined by deposits of this sort.2 In other cases lake-basins are wholly or partly formed by sub-glacial deposits not directly due to ice-action. In all regions giving evidence of former glaciation gravel ridges are met with in certain parts of the plains or lowlands. These, known in Sweden as åsar,<sup>3</sup> in Scotland as kames, and in Ireland as esker, are generally believed to be due to the action of sub-glacial rivers, and such ridges, being rendered watertight by a coating of finer deposits, form the whole or part of the margin of many lake-basins in the north-west of Russia, Finland, and elsewhere, and in past times have manifestly confined the waters of much more extensive lakes, which have been wholly or partially drained by the bursting of these barriers.

But there is another class of lake-basins belonging to formerly glaciated regions, the origin of which is still hotly disputed. These are basins hollowed out in solid rock, their bottoms in many cases at a considerable depth below sea-level, and are found either in the valleys of mountainous regions, or in the more level regions in which the principal evidence of former glaciation is in the form of roches moutonnées—that is, rounded rocks presenting gently sloping ice-scratched surfaces on the side from which the ice-sheet advanced, and more or less abrupt and rough surfaces on the side towards which its motion was directed. By some the origin of these lakes is ascribed to erosion by ice during the period when the

<sup>&</sup>lt;sup>1</sup> Penck, Morphologie der Erdoberfläche, Stuttgart, 1894, ii. 265-266.

vast ice-sheets just spoken of covered the land, and a similar theory has been put forth to account for the origin of fiords. In this latter case, however, a distinction must be observed. All are agreed in regarding fiords as submerged land-valleys, but while some would attribute the hollowing out of those valleys mainly to ice-action, many, perhaps most of those who believe in the scooping out of lake-basins by ice in valleys originally due to the action of rain, frost, and rivers, consider fiord-valleys as mainly due to the same agents and merely modified by ice. But the whole theory ascribing such great effects to the action of ice is stoutly contested by others, and by these the former ice-sheets are regarded as connected with the abundance of lakes and fiords in the regions which they overspread, mainly in this way, that they have served to protect those hollows from obliteration by the process of deposition that always and necessarily accompanies the process of degradation and erosion by rivers and atmospheric agents.

Obviously this is not the place to discuss these rival theories, but it may be worth while to point out how much agreement there is between the opposing sides. It is admitted by both that rock-basins may be and are due to different causes. It is admitted by both also that the ice-sheets of the formerly glaciated regions have in many cases preserved hollows not originally due to ice-action. And, thirdly, it is admitted even by the strongest opponents of the theory of the glacial origin of rock-basins that some power of erosion or scooping out as distinguished from mere abrasion must be allowed to ice-action.¹ The matter in dispute therefore comes to be in some measure a question of degree and one affected in many cases by local circumstances. And here it may

<sup>&</sup>lt;sup>1</sup> Geog. Jour. i. pp. 487, 489.

be added that the upholders of the ice-erosion theory believe that in the formation of many lake-basins in solid rock, the action of the ice consisted merely in the removal of softer and less compact material from a pre-existing rocky hollow. This obviously removes the question of the origin of this hollow a step backwards, but even where this is the case the origin of the lake-basin may yet, it is contended, be attributable to ice-action inasmuch as the hollow may have been formed by movements going on beneath the superficial softer material and may never have shown itself as a surface-form till the latter was dug out by the ice.<sup>1</sup>

#### 9. Geological History

In a previous section part of the geological history of southern Europe has been given in connection with the physical history of the Mediterranean basin, and it will now be well to complete that sketch by taking a rapid survey of the growth of the European continent.<sup>2</sup>

<sup>2</sup> Largely based on a paper by Dr. Archibald Geikie on "Geographical Evolution," *Proc. Roy. Geograph. Soc.* 1879, p. 422, republished in Geikie's *Geological Sketches*, 1882, p. 312.

¹ Penck, Morphol. der Erdoberfläche, ii. 291. See also vol. i. pp. 407-410, ii. 259-265 and 318-321 for a discussion of this question of glacial erosion, with numerous references to authorities. The classical paper on the hollowing out of rock-basins by ice is that of Mr. (afterwards Sir Andrew) Ramsay, "On the Glacial Origin of certain Lakes in Switzerland" in the Quart. Jour. Geol. Soc. xviii. (1862), p. 185; and among other early papers advocating the erosive power of ice on a large scale were those of Dr. Robt. Brown, "On the Formation of Fjords," etc., in the Jour. Royal Geog. Soc. xxxix. (1869), p. 121, and xli. (1871), p. 348. Among recent discussions of the subject are the "Note on the Conservative Action of Glaciers," by D. W. Freshfield, in Proc. Roy. Geog. Soc. New Series, x. (1888), p. 779, a paper by Prof. Bonney in the Geog. Jour. i. (1893), p. 481 (both adverse to glacial erosion), an article by A. R. Wallace in the Fortnightly Review, Dec. 1893, and J. Geikie, The Great Ice Age, 3rd edition, 1894, pp. 216-237 (both favourable to glacial erosion).

So far as the researches of geologists can reach, the oldest extensive land-area representing the European continent appears to have lain in the north and northwest, and probably stretched far towards the margin of the submarine plateau previously described, though now surviving only in the Archean rocks of Finland, Scandinavia, the north-west of Scotland, and a few other widely-separated localities. To the south lay a shallow sea spreading over most of the European area, but probably having islands in its midst. The bed of this sea slowly subsided, receiving as it sank the deposits that now form the Cambrian and Silurian rocks; and this went on until, in the region where Britain now lies, the accumulated sediment attained a thickness of several miles. At the close of this period vast changes took place, which led to the first appearance of elevated ridges on the sites of the Alps, the mountains of Spain, and the highlands of Britain. The floor of the Silurian sea underwent violent contraction, by which its strata were thrown into undulations and folds, and considerable areas were forced above the surface of the water. Large basins of water were thus cut off from the ocean, and became gradually converted into fresh-water lakes, the waters of which, however, were strongly impregnated with iron. These lakes are now represented by the deposits of the Old Red Sandstone epoch, in which the characteristic rock is a sandstone having each of its grains of sand coated with a thin pellicle of oxide of iron. From the position in which these deposits are found, and the nature of the remains contained in them, it would seem that one of these large lakes extended right across the centre of Scotland almost to the western sea-board of Ireland; while another, to which Sir Archibald Geikie has given the name of Orcadia, extended from the west of the Moray

Firth to the Sognefiord and Dalsflord in Norway, and

even perhaps into western Russia.

Meanwhile further changes were going on. While the most extensive area of high ground still lay on the north-west, the southern parts of Europe came to be represented only by a number of islands. What are now the high grounds of Britain were then merely an island group. The elevated land of Bavaria and Bohemia likewise stood out above the waters. The Spanish peninsula was an island of still larger size, and an irregular ridge stretched from the Mediterranean across the site of France towards what is now Brittany. As the shallow waters surrounding the islands and ridges became slowly silted up, great tracts of marsh were formed. Cryptogamic vegetation flourished in these marshes, and during a succession of slow depressions and upheavals much of this vegetation came to be buried under submarine mud. In this way the principal European coalfields, those of the Carboniferous era, took their birth.

Movements of upheaval, ushering in the next era, led to the formation of great land-locked basins similar to those which had characterised the Old Red Sandstone epoch, with this difference, however, that the basins of this later era were in many cases much more completely cut off from the sea than the earlier ones. Those having no outlets became salt, and many of the principal beds of rock-salt in Europe, such as those of Cheshire in England; those of Stassfurt, Halle, and Sperenberg in Germany; those of Hallein and Berchtesgaden in Bavaria; and of the Salzkammergut in Austria, are relics of these old Permian and Triassic lakes.

It may here be mentioned that it was previous to this era that the first and principal upheaval of the Ural Mountains took place. Silurian, Devonian, and Carboniferous rocks make up the bulk of these mountains on the flanks of their crystalline core; but the Permian at their base are composed of the waste derived by denudation from these older strata. And it is likewise worthy of notice that during all the various disturbances that took place in the course of the development of the European continent, the greater part of the Russian area escaped the violent contortions that affected most of the rest of Europe. Only in the Urals themselves and in the Crimea do we meet with those crumplings which are characteristic of chains of upheaval generally; it has, however, been shown by Prof. Karpinsky that some dislocation and disturbance are likewise apparent in a region in the south stretching from the Sandomir ridge in the south of Poland, through the districts of Kiev and Poltava, to the coal-basin of the Donets, and thence to the Bogdo Hills in Astrakhan.<sup>1</sup>

After the Triassic period in the geological history of Europe, subsidence occurred to an extent far exceeding any that had yet taken place. It is true the highlands of the north-west of Britain still continued to remain as land; but it seems probable that most of the other parts of Europe that had been dry since the ridging up of the floor of the Silurian sea were now again submerged. The Northern Alps were once more laid under water, and so also was at last a large part of the Iberian plateau. In this wide-spreading sea were formed those thousands of feet of limestone, shale, and sandstone that constitute the Jurassic system.

A still greater amount of submergence distinguished the succeeding age, known as the Cretaceous. Yet the sea that covered so much of the European area at this

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Nature, vol. xxix. p. 461, citing Memoirs of the St. Petersburg Society of Naturalists, vol. xiii.

period was probably a shallow sea, not exceeding a few hundred feet in depth. There appears to be reason to believe that there was a northern basin somewhat isolated from the open ocean of the southern region. In the northern basin was deposited the calcareous ooze which became converted into the white chalk of England, of the north of France, Belgium, Denmark, and North Germany; while contemporaneously there was formed in the open ocean of southern Europe the "hippurite limestone."

Again during the Eocene epoch the European area seems to have been represented less by land than by water. A wide sea, indeed, appears to have occupied the greater part of central Europe and of Asia; and it was not till Eocene times were drawing to an end that the European continent began to assume somewhat of its present form. It was then that the great mountain chains of the south —the Pyrenees, the Alps, the Apennines, and the Carpathians, as well as the Caucasus—were upheaved to a considerable elevation, the upheaval being accompanied with violent contortions of the strata. The subsequent history of the European continent consists chiefly in minor modifications of the outline, the filling up of great internal lakes, and the raising of the mountains to a still higher level by secondary upheavals, as already indicated in the section dealing with the physical history of the Mediterranean. During Miocene times the lofty range of the Alps was flanked on the north by a great freshwater lake; and it is interesting to find that the remains disinterred from its ancient bed prove that Europe then supported a vegetation characteristic of a much warmer climate than it now enjoys. Date-palms, sequoias, Canary laurels, and evergreen oaks were then among its products; and it is still more remarkable that other

vegetable remains of the same epoch show that an almost equally genial climate must have prevailed throughout the whole of the continent, even to the extreme north, and, indeed, far beyond the present northern confines of Europe.

It was after the close of the next period—the Pliocene—towards the end of which the climate of Europe was getting gradually colder, that the Glacial Epoch referred to in the previous section occurred. The effect of the glaciation that then took place was not confined to the area invaded by ice. Within that area it overspread the surface, especially in the hollows, with a covering of triturated earth known as boulder-clay—a deposit generally supposed to be derived from the underlying rocks by the grinding action of the moving mass of ice. But a large part of the richest soil of Europe beyond the limits of the glaciers and the great northern mer de glace seems to have owed its origin to the same conditions.

In all the river-basins of central Europe, in the Rhone valley, the valley of the Rhine and its tributaries, those of the Fulda, Werra, and Weser, in the basin of the Elbe, the Hungarian flats watered by the Danube and its tributaries, and even in the higher valleys of the Carpathians, there is a deposit known as löss, "a yellow or pale grayish-brown, fine-grained, and more or less homogeneous, consistent, non-plastic loam, consisting of an intimate admixture of clay and carbonate of lime," found not only in the lower grounds, where it is thickest, but even at heights of 800 and 2000 feet, sometimes, it is even said, 3000 to 5000 feet.\(^1\) Everywhere these deposits form an exceedingly fertile soil. Various theories have been advanced as to their origin; but almost all who have inquired into the subject appear to

<sup>&</sup>lt;sup>1</sup> Prof. J. Geikie, Prehistoric Europe, pp. 144, 146.

be agreed that the material of which they are composed is the fine silt derived from the grinding action of glaciers; and the most probable explanation of their distribution seems to be that this silt was spread over the surface of the land by the winds. In Russia the yellow earth was subsequently spread in layers by the action of the waters of the existing seas.<sup>1</sup>

Again, in Russia, where löss is absent, there is an enormous area in the south covered by a rich soil known as chernozeom, or "black earth," and a similar explanation would account for its presence in that region; but, owing to the difference of the configuration of the surface, and owing to the fact that the floods from the foot of the ice-sheet drained southwards, where there was no obstruction to their course, the chernozeom was more evenly distributed, and never attained such a thickness as is sometimes reached by the löss.<sup>2</sup>

#### 10. Climate

It is in studying the climate of Europe that it is most important to remember that this division of the earth is, after all, simply a peninsula of the great Eurasian continent. It is equally necessary to consider Europe as but a small portion of the world as a whole. It has been demonstrated that weather changes on the earth's surface are conditioned by the state of the atmosphere at a height of approximately five to six miles above that surface. Above this height the temperature of the atmosphere is constant—seasonal changes are not felt, no water-vapour is present. The normal weather sequence, to summarise which the term

<sup>&</sup>lt;sup>1</sup> Prof. J. Geikie, Prehistoric Europe, p. 239. <sup>2</sup> Ibid. p. 243.

## RAINFALL AND TEMPERATURE MAP OF EUROPE





climate is used is, therefore, in the main, governed by the pressure of the middle atmosphere, and for any country is diversified by the elevation of the land, the nearness of the sea. The fundamental facts for the climate of Europe are its latitude on the one hand, and, on the other, its peninsular character with ocean to the north and west and a great sea to the south and a great wide spreading land mass to the east.

In the Southern Hemisphere, where most of the globe in latitudes corresponding to those of Europe is ocean covered, areas such as Tasmania and South Island, New Zealand, lie on the polar edge of a belt of high atmospheric pressure, across which large anti-cyclonic eddies pass in procession at fairly regular intervals. In the winter this belt swings towards the equator, but at all seasons the Brave West Winds blow with notable steadiness.

In the Northern Hemisphere such simple surface conditions do not prevail. In the winter a belt of high pressure stretches across the globe; over the oceans it lies between lat. 20° and 40°, but over the land both in America and Eurasia it spreads northwards across the Arctic coasts in Canada and Asia to form a connection north of Bering Strait, thus completely enclosing an area of low pressure which has its centre on the west of Iceland. Ireland, Great Britain, Scandinavia, Novaya Zemlya, therefore lie on the margin of the low-pressure whirl and the high-pressure belt. In summer, however, the high-pressure areas are confined to the Atlantic and Pacific Oceans; a deep depression is developed over Asia, and the area between 50° N. and the pole experiences a moderately low pressure. Eastern Europe between the Black and Baltic Seas is on the margin between the oceanic high pressure and the Asiatic low pressure. South-western Europe is overlapped by the Atlantic area of high pressure which centres at the Azores, and north-western Europe experiences low pressures similar to those of Tasmania.

Between the two seasonal extremes the pressure conditions gradually change, with the result that Europe may be considered to comprise four areas: the north-west, including the British Isles, always on the margin of the high pressures; the south-west, Spain, south France, Italy, etc., where the pressure is always high but where the pressure is higher still on the eastern land side in the winter and on the western oceanic side in the summer; the north-east, where the pressures are marginal in the winter and low in the summer; and the east, where the pressures are marginal in the winter.

The situation of the areas of high pressure in regard to Europe is of primary importance for two reasons. The heavy air, denoted by the high pressure, tends to move with a slow, clock-wise swirl outwards and to spread near the surface. At the same time it presents, as it were, an inclined plane to the lighter, faster-moving cyclonic eddies which tend by their lightness and momentum to be forced upwards away from the earth's surface.

The mean monthly temperatures in Europe are closely connected with the distribution of pressure. Before passing to the details it is necessary to consider the relation between latitude and temperature in the Northern Hemisphere. At lat. 40° N. the average or normal temperatures are 43,1–39, 41 for December, January, and February; 73, 76, 73 for June, July, and August; and 57 for the year, with a range of 37. At

<sup>&</sup>lt;sup>1</sup> Temperatures in this paragraph are always in degrees Fahrenheit.

lat.  $50^{\circ}$  N. the corresponding temperatures are 20, 15, 18 for the winter; 63, 66, 64 for the summer; 42 for the year, with a range of 51. At lat.  $60^{\circ}$  N. they are 8, 3, 6; 54, 58, 55; 30 and 55.

These figures indicate that the annual temperature roughly declines a degree for each degree of latitude; that the annual range increases from 37° to 55°; that the three winter months and the three summer months differ but slightly in temperature, while the autumn fall and the spring rise vary from 8° per month at lat. 40° N. to 14° per month at lat. 60° N.

In general the actual temperatures experienced in the Northern Hemisphere differ from these normals in close relation to the differences in pressure. Differences from these averages for the latitude are referred to as abnormal temperatures. Where the pressure is low the temperature is abnormally high, and vice versa. In summer the abnormal differences do not exceed 10° F., but in winter they exceed 25° F. The four areas into which Europe has been divided climatically present the following variations of temperature. The north-west has a normal temperature in summer, and is abnormally warm (between 15° and 35° above the normal) in winter. The southwest fluctuates between normal and 5° above the normal. The north-east and south-east are normal in summer with temperatures above the normal to the east, and slightly above the normal in winter with temperatures on the east below the normal. The net consequences of these differences from the normal are that the north-west has throughout an annual range of temperature of only approximately 20° F. and a mean annual temperature some 8° or 10° above the average for the latitude; it is an area of exceptional warm winters. Throughout this consideration of temperatures the figures quoted refer entirely to temperatures corrected to sea-level. Wherever the land is elevated the actual temperatures experienced will be lower than those quoted; the snow-capped mountains have continuously a temperature below 32° F.

The accompanying map illustrates the facts just stated by the isotherms there shown. The abnormally high winter temperatures of the north-west result in the north and south direction of the isotherm of 32° F. from the Lofoden Islands to Hamburg. The general east-west direction of the July isotherms in Russia show the normality of the temperatures with a tendency to an excess of warmth on the east, and the winter deficit of warmth on the east is shown by the southward dip of the January isotherms over Eastern Russia.

It follows, therefore, that most of Europe in the winter is covered by a wedge of cold, heavy air, and that the Icelandic low-pressure whirl consists of exceptionally warm air, which tends to pass above the cold wedge all along the north-west margin.

Most of the winds which reach Western Europe blow from the S.W., W., or N.W., across the ocean and contain considerable quantities of water-vapour. In general the areas of low pressure which tend to be abnormally warm are also rainy at the same time. In summer the Azores high pressure spreads over the south-east, which is then almost rainless; the east and north-west are then subject to slight precipitation, which frequently occurs with thunder-storms.

In winter the continental high pressure forms a wedge of cold, dry air over most of Europe, and only the north-west and the western shore-lands of the Mediterranean are rainy. Consequently, as is shown on the map, the east has most of its rain in the summer, the north-west has a considerable excess during the autumn

and winter, and the Mediterranean lands experience winter rainfall only. In general, also, the elevated areas are rainier than the neighbouring lowlands, and the western slopes of hill and mountain ranges are wetter than those on the east; for example, the Pennine slopes on the west receive in the year approximately ten inches of rain more than those on the east.

High pressures are accompanied by almost cloudless skies, consequently Spain is the sunniest and the North-West the least sunny part of Europe; the difference between the two amounting to more than 1200 hours of sunshine in the year, between 3 and 4 hours on the average per day.

There are still certain local phenomena connected with the climate of Europe which it will be more convenient to treat of here from a general point of view than to relegate to the chapters dealing with the various sections of the continent. These are the winds known as the *mistral* and *bora*, the *föhn* and the *sirocco*.

The first two of these are essentially the same in character, though they are called by different names in the different localities in which they prevail. The mistral—that is, the magistral or masterful wind—is a north-west wind which blows on the coasts of the Mediterranean, from the mouth of the Ebro in Spain to the shores of the Gulf of Genoa, but is specially prevalent in the French portion of this area round Marseilles. It well deserves its name on account of the extreme violence by which it is generally characterised. In France it has been known to overturn railway trains, and the injury which it does to vegetation, and more particularly to trees, which it will sometimes almost entirely strip of their foliage, renders it, as an old

<sup>&</sup>lt;sup>1</sup> Fischer, Klima der Mittelmeerländer, p. 34.

proverb intimates, one of the most detested scourges of Provence. Its injurious properties are increased by the fact that it is always of a piercing icy coldness, like our east winds. Still its influence is not wholly a noxious one. It renews and purifies the air, the few valleys in the south-east of France which are wholly sheltered from it being mostly unhealthy; and in spite of its coldness both Grisebach and Fischer are agreed in maintaining that it tends on the whole to increase the mildness of the climate in the region where it prevails, at least wherever there is partial shelter from its direct action. It does so because it is always dry, and accompanied by a cloudless sky, and thus promotes the warming of the soil by the rays of the sun. This wind occurs when there is a low pressure in the Gulf of Lions or a sharp rise in pressure in Central or Northern France, and hence there is no season of the year quite free from this scourge, though it is generally most violent, at least in Provence, at the end of winter and in the early spring. At Marseilles it blows on an average 176 days in the year, sometimes continuing for days together without interruption; sometimes ceasing at night in order to return with equal violence the following day. At the mouth of the Ebro valley, where it goes by the name of cierzo (as at Narbonne it is called cers or cierce), it occurs chiefly in autumn and winter.

The bora, the name of which is no doubt an abbreviated form of boreas, the Latin and Greek for the north wind, is a wind of a similar character which blows on the west coast of the Balkan peninsula, from Trieste to Albania. Like the mistral, it is always cold and dry, and is generally accompanied by clear sunshine, though not so regularly as the former; but it is specially character.

<sup>1</sup> Grisebach, Vegetation der Erde, i. 251; Fischer, Klima, etc., p. 35.

acterised by its liability to blow in repeated gusts, which gradually become less violent and less frequent as the bora dies away. Usually it is due to precisely similar causes to those which give origin to the mistral, high pressure in Central Europe accompanied by low pressure over the south of the Adriatic Sea.

The sirocco is a wind of which various accounts have been given, and this appears to be due to the fact that the name is actually bestowed on winds of very different character and origin. Throughout Italy, on the southeast of France, and all along the west coast of the Balkan peninsula, the name is applied to moist south-east, south, or south-west winds, which may blow with hurricane force. The true sirocco prevails chiefly in Malta and Sicily, though it may extend as far north as Rome, and is even a greater scourge to the regions visited by it than the mistral is to Provence. Like the mistral and the bora, it is violent and dry; but in other respects it is a complete contrast to these. Blowing from the south instead of from the north, it is not cold, but on the contrary characterised by scorching heat, which may amount even at midnight to about 95° Fahr.; and the sky instead of being clear is filled with a leaden-coloured haze, through which the rays of the sun can scarcely pierce. Under its breath the ground cracks, vegetation dries up and withers, the leaves of the trees, if it continues to blow for some days, roll up and drop off. Every chink gets filled with the fine dust which it carries. If it occurs at the time of blossoming of the vine or the olive the whole year's harvest may be lost. It is frequently said to be confined to the summer months, but this is incorrect. It may, in fact, occur at any season of the year, and it has the same characteristics in January as in July. Most commonly it blows in spring. As a rule, it lasts

for three days, seldom longer, and it may not last more than a few hours.

A wind on the south-east coast of Spain with precisely the same characteristics is known under the name of leveche. At Almeria it is specially frequent and violent, but it seldom extends so far west as Malaga. The solano, which also visits these regions, and is often confounded with the sirocco, is, in fact, a wind of a totally different character, being generally a moist east wind.

The mistral, bora, and sirocco are connected, since they all depend upon the relative situation of a depression over the Mediterranean area and high pressure over the continent.

The föhn yields to none of the others already mentioned in the violence with which it sometimes blows. prevails in the valleys opening to the north on the north side of the Alps, and, above all, in that of the Reuss. The town of Altdorf in that valley has on several occasions been destroyed by conflagrations occasioned by its fury, and the law now requires that all fires in the town must be extinguished on its approach. But on the whole, the föhn is a beneficent wind, and is welcomed in the valleys where its influence prevails. It blows chiefly during winter and spring, and being warm and dry, is known as "the great snow-melter," from the extraordinary effect it has in clearing away the snow from the mountain-sides. Professor Dufour has shown that in one case when the föhn raged for two days in the valley of the Reuss and the continuation of that valley, in the Lake of Lucerne, the temperature within its domain was from 6° to 9° C. (11° to 16° F.) above the normal in northern Switzerland. In the lower valley of the Inn, which is also affected by it, the cultivation of maize is rendered possible by the elevation of temperature due to its influence.

The föhn blows down the Alpine valleys sometimes towards the north and sometimes to the south. The air moves from a high-pressure area towards a depression and owes its heat to the compression it undergoes in its descent to lower altitudes. Strictly it is a normal air movement accompanied by a rise in temperature due to its descent into the valleys.

#### 11. Flora and Fauna

Both as regards the flora and the fauna Europe has the character of a peninsula appended to Asia. In relation to the general aspect and the affinities of the European flora, Grisebach has assigned almost the whole of Europe to three great regions, each of which is continuous with portions of the same regions in Asia, the most southerly also with a portion in Africa. Wallace, however, following Sclater, refers the whole of Europe with the north of Africa to the *Palwarctic Region*, which includes also the whole of Asia north of the Himalayas, and this region is subdivided into two sub-regions, one the Mediterranean lands, and the other the rest of the continent.

Only a very small portion of the mainland of Europe in the north-east belongs to the true Arctic region in which the characteristic vegetation is that of the mosses and lichens forming the tundras of north-eastern Russia and northern Siberia. The rest of Europe north of the Alps, and the Pyrenees in the west, and north of the steppe-region of Russia in the east, is referred by Grisebach to what he calls the Forest Region of the Eastern Continent, which extends right across Asia in corre-

sponding latitudes. Throughout this vast area the same general character stamps the vegetation; and the constituents of the flora, to a large extent the same throughout the whole area, vary so gradually that no sharp line can be drawn through any part of it. The whole area is fitted for the growth of forest trees such as are found in our islands, though the forests that formerly existed have in a great measure given way before the advance of cultivation. What is frequently known as the "Germanic flora," from the fact that Germany forms its centre in Europe, is the characteristic flora of the whole region.

South of the Pyrenees and the Alps all the countries bordering on the Mediterranean in Europe, Asia, and Africa, have at least in their lower levels a flora of a very uniform aspect, and with different natural affinities from those of the Germanic flora on the north. This is the region of the laurel and myrtle, the holly and holmoak, the pistachio nut, the carob or locust-tree, the caper and the dwarf-palm, and among cultivated plants the orange and the olive. So close is the agreement between the floras north and south of this great inland sea that this fact alone is enough to prove the recent land-connection between the northern and southern shores spoken of in a previous section. M. Cosson, who made interesting investigations concerning the floras of the Barbary States and southern Europe, ascertained that out of 434 plants collected on the maritime district of the province of Constantine only thirty-two were not to be found on the southern coasts of Europe, and though a gradual change is observable in the Mediterranean flora from west to east, the same correspondence is maintained between the opposite shores at different parts.

The general aspect of the Mediterranean flora is in

accordance with the warmth and dryness of the climate in summer, and hence the most characteristic vegetation consists in the so-called macchie, in French maguis, that is, evergreen shrubs or small trees, such as most of those above mentioned, with thick leathery leaves adapted to retain moisture. How entirely this macchia form is the result of a climatic adaptation is shown by the fact that the twenty shrubs of the Mediterranean region resembling the oleander in habit belong to fifteen genera, and these to fourteen different botanical families.2 Thorny and leafless shrubs and grasses (grasses like the esparto), all having the same drought-resisting power, are likewise abundant, especially on the tablelands of Spain. The orange is peculiarly typical of the Mediterranean climate, and above all of the regions in the far south where it flourishes most abundantly. Its foliage of the characteristic macchia structure enables it to flourish in spite of the summer droughts, and its juicy fruits keep swelling all through the autumn rains.3

Some of the forms which are now among the most characteristic features of the vegetation of this region have been introduced by man within historical times, and have since run wild. The most notable of these perhaps are the cochineal-fig and the so-called American aloe, which were introduced from the tableland of Mexico in the sixteenth century; and it must also be remembered that some of the cultivated fruits, for which the Mediterranean is now celebrated, such as those of the orange tribe and the date, are not of European origin, and in some cases took long to acclimatise. Even in Pliny's

<sup>&</sup>lt;sup>1</sup> Plural of macchia from Latin macula, from the mode in which the clumps of such vegetation are dotted over the landscape.

<sup>&</sup>lt;sup>2</sup> Grisebach, Vegetation der Erde, i. 294.

<sup>&</sup>lt;sup>3</sup> Fischer, Beiträge zur physischen Geog. der Mittelmeerländer, besonders Siciliens, Leipzig, 1877, p. 33.

time none of the orange tribe was cultivated in Italy. Vain efforts were repeatedly made to introduce the citron, the cultivation of which did not succeed till the third century A.D. Lemons and oranges were established much later. And it was with equal slowness that some other trees, such as the chestnut and the peach, which have now advanced much farther north than the Mediterranean, were brought to yield good fruit within that area.

The annual course of vegetation in the Mediterranean region is just as different in its general aspect from what we find in the north of Europe. The period of repose, which in our part of the continent falls in winter, occurs to the south of the 40th parallel of latitude,—the latitude of the middle of Spain, the south of Italy, and the north of Greece,—in summer. The macchie are enabled by their leathery leaves to pass this period of repose in full leaf without injury. Not till after the first heavy shower of rain in October does vegetation begin to revive. The seeds of annual grasses and herbaceous plants begin to germinate, the parched ground becomes again covered. with a delicate fresh green; the flowers begin to bloom afresh, and the evergreen trees and shrubs put forth young leaves. North of the parallel of 40° N. this autumn vegetation is brought to an end in the middle of December, but farther south it goes on all through our winter, and then too a whole host of true winter plants begin to bloom, though destined to vanish again in March. In this latter month begins the much richer, more luxuriant, and more varied spring vegetation, which attains its climax in the month of April. Now the fruittrees that shed their foliage become clothed again with leaves and covered with blossom; now the orange groves scent the air for miles around Orchids and all manner

of bulbous plants, lilies, irises and numerous others, rockroses, lavenders, crucifers, and Composite appear in innumerable crowds and exhibit the most splendid variety of colour.<sup>1</sup>

The effect of the mountain barrier in marking off two different floras on the north and south is almost everywhere very observable, but nowhere is the transition more sudden than where we pass from the highlands of south Germany to the plains of Hungary. The gradual rise in the land from north to south in Germany causes a remarkable uniformity in climate in that region, the rise of temperature due to a more southerly latitude being steadily counterbalanced by the lowering due to the increase of elevation. Hence also the flora remains strikingly constant in its constituent elements, but when we descend to the plains of Hungary, watered by the Danube and Theiss, the so-called pusstas, the scene is completely changed. The climate and vegetation are here different both from those of the north and those of the Mediterranean region in the south. Surrounded on all sides by mountains, these plains are to a large extent deprived of moisture from whatever quarter the wind may blow, but being thus exposed directly to the rays of a burning sun, are as dry and parched as the tablelands of Spain. Here consequently the vegetation has the same aspect as in the steppes of southern Russia, with which the pusstas of Hungary are referred by Grisebach to a separate region of vegetation extending eastwards into Asia along the southern frontier of the Forest Region. According to Grisebach this whole region is characterised by a climate too dry for the growth of forests, but there can be no doubt that he has exaggerated the summer drought of much of that part of Russia and

<sup>&</sup>lt;sup>1</sup> Fischer, Klima der Mittelmeerländer, pp. 32, 33.

Rumania within the line which he has drawn as the north-western limit of the region. This line runs from about 53° N. in the east to the Danube, where that river begins to form the boundary between Rumania and Bulgaria, and it has been pointed out that even to the south of that limit the climate is in some parts sufficiently moist to support very considerable stretches of forest. 1 Nevertheless it is undoubted that in this part of Russia the climate becomes drier and drier as we go eastwards, and that here as in the isolated pusstas of Hungary the vegetation has an aspect quite peculiar. Nowhere does the vegetation form a continuous covering of any sort for the soil, and the principal vegetation consists of tall coarse grasses and shrubs. Here, as well as in the Mediterranean region, the spring is ushered in by the sudden appearance of a great variety of beautiful bulbous plants—narcissus, tulips, hyacinths, crocuses, asphodels, etc.

Though this steppe region, as regards its general aspect, is perhaps entitled to be ranked as forming a separate section of the European flora, it does not hold so isolated a position when considered with reference to the natural affinities of its constituent elements. When looked at from this point of view it is seen to be only a peculiar part of the Mediterranean flora, and to have entered on its European domain from the south, that is, from the eastern or Asiatic portion of the Mediterranean region. It is at any rate strikingly divergent in its natural affinities from the Russian flora of the Forest Region immediately to the north, and these relations are explained by Engler as most probably due to the fact that the steppe flora immigrated from the south as the land, formerly submerged, gradually rose above the surface from the south northwards, so that the new land

<sup>1</sup> Woeikof, Die Atmosphärische Circulation, pp. 18, 19,

was settled by southern plants before the northern ones could gain access to it.<sup>1</sup>

Before leaving the consideration of the European flora, some attention should be given to the effects wrought on the distribution of vegetation by another recent event in the geological history of Europe—the Ice Age. The immediate effect of the Ice Age was of course to extinguish for the time the vegetation over the regions where the ice-sheets actually spread; but it has had some other effects of a more lasting nature. By lowering the temperature of the plains adjoining the icefields it permitted these plains to be occupied by plants capable of standing a severe climate. When more genial conditions returned, the plains were reoccupied by more vigorous competitors for subsistence, and the former occupants were driven up the mountains to find a refuge there, or compelled to retire northwards with the ice. Hence the scattered distribution of what are known as Arctic-Alpine plants, that is, such as are found only in the Arctic regions, and on Alpine heights between the tree- and the snow-limit on the mountains. Hence also the similarly scattered distribution of some other forms, which are not Arctic, but which could not now migrate across the plains by which their different seats are separated, or by which they are isolated from their nearest allies. But there can be little doubt that another effect of the Ice Age in Europe was wholly to extinguish there certain forms which were present during the Pliocene Epoch. Such, for example, are the Canary laurel, the tulip-tree, and the magnolia, the last two of which are still found in America, in latitudes corresponding to those of Europe. In their extinction we see an effect not only

<sup>&</sup>lt;sup>1</sup> Engler, Versuch einer Entwickelungsgeschichte der Pflanzenwelt, i. 184-86.

of the Ice Age, but also of the sea and mountain barriers in the south. In America such forms had, on the advent of glacial conditions, a way of escape southwards, whence they were afterwards able to return to their northern seats; but in Europe they were, so to speak, crushed up



CHAMOIS.

against the Pyrences and the shores of the Mediterranean, and thus wholly destroyed.

Regarding the fauna of Europe little need be said. The prevailing forms of the sub-region constituted by central and northern Europe are well known. Among mammals there are only two genera absolutely peculiar to it, the chamois (Rupicapra), inhabiting all the mountains of central Europe, and the aquatic insectivorous desmans,

or musk-rats (Myogale), of which there are only two species, one inhabiting the rivers of south Russia and the other those of the French Pyrenees. Almost confined to this sub-region are the Spalax or mole-rat, found in eastern Europe and western Siberia, and the saiga, a large-nosed antelope, with a similar distribution. The only genus of



WILD SHEEP.

mammals peculiar to the Mediterranean sub-region found in Europe is the dama or fallow-deer. Among the characteristic genera not found in the other sub-regions of the Palearctic region, but found in Europe, are the Genetta (the civet), Herpestes (the ichneumon), the hyana, and porcupine. A wild sheep, Oris musimon, is still to be seen among the mountains of Sardinia, Corsica, and the south-east of Spain. Bears, badgers, pigs, stags,

fallow-deer, goats, polecats, and numerous other mammals found in north Africa, but not in the rest of that continent, all bear witness to the recent land connection with Europe already referred to in previous sections, and serve to justify the association of that strip of the African continent in the same sub-region with southern Europe and western Asia.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> See Wallace, Distribution of Animals, chap. x.

### CHAPTER II

#### ITALY

## 1. Geographical and Historical Position

ITALY, the middle peninsula of southern Europe, is the garden of this continent, the land of classic memories, where the very stones are eloquent of bygone times; the home of poetry and the arts, as well as of the sublimest natural scenery. In a survey of Europe it may well claim the first place in our consideration even from a geographical point of view. Europe, as it now exists, the habitation of so many millions of the human race, is largely the work of man himself, and the preparation of this abode has proceeded mainly from the south, where the conditions were at the start in some respects most favourable. And in this work of preparation no region of the south has played a more important part than the middle peninsula of the Mediterranean.

Italy may be described as presenting an epitome of the tragedy of human history, or what perhaps on a superficial though very striking and absorbing aspect appears the tragedy of human history. Here more frequently than on any other theatre has been seen the spectacle of the rise and fall of powers and princes in circumstances of surpassing interest, the struggle of man with nature gradually proving more and more successful, rendering

the conditions of life easier and the scope for human activities wider and higher, then ending in a seemingly inevitable decay. Here above all were laid the foundations of that great dominion which has long commanded and will long continue to command the attention and solicit the inquiries at least of all the western world, which first by slow then by more rapid steps, "sometimes vanquished in battle, always victorious in war," spread a uniform civilisation round all the shores of the Mediterranean extending in the north to the banks of the Rhine and the Danube, which even in its decline gave shape to the organisation of a religion, first despised, then persecuted, next embraced, and ultimately found capable of taking its place as a unifying influence, which, largely through the influence of that religion, provided the forms of civilisation for the barbarians who overthrew it, and which may therefore without exaggeration be said to have been directly or indirectly the cradle of civilisation for by far the larger part of the continent.

## 2. Outline and General Relief of the Land

Girt on the north by the loftiest mountains in Europe, and washed on all other sides by the sea, the mainland portion of Italy, severed by the Strait of Otranto, which is no more than 47 miles wide, from the Balkan Peninsula to the east, forms a well-marked physical unit with an area of about 90,000 square miles, or somewhat larger than Great Britain with its adjacent islands, and to this Sicily, Sardinia, Elba, and smaller islands add about 19,000 square miles to form the kingdom of Italy.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> Pre-war Italy: area, 110,632 square miles; pop. (1901), 32,475,000; (1911), 34,671,000, with a density of 327 per square mile. Post-war



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Most of the famous summits of the Alps, along which runs the frontier of the kingdom on the north and north-west, lie outside the political boundaries of Italy, the noblest mountains of the Italian Alps being the *Gran Paradiso*, south of the Dora Baltea, which reaches an elevation of 13,320 feet; the *Ortlerspitze*, 12,810 feet, in the Alto Adige; and *Monte Viso*, to the south-west of Turin, which gives birth to the sources of the Po, and attains an altitude of 12,605 feet.

Beyond the region of Monte Rosa the Alps curve southerly by Mont Blanc, Mont Cenis, and Monte Viso to the Maritime Alps, whence, lower in height, the mountains pass eastwards, overlooking the Gulf of Genoa, and merge into the Apennines, which form, so to speak, a long offshoot of the Alps, and traverse the whole of Italy almost as far as the very toe of the boot. The dividing line between these two ranges is variously fixed, but now perhaps most usually at the Collo dell' Altare, or di Cadibona, the pass to the west of Savona on the road connecting that town with Turin, the lowest pass in that region (1300 feet). These mountains at all parts vary greatly in height. Many peaks rise above 6000 feet, and the culminating point of the whole system is the Monte Corno, in the mass known as the Gran Sasso d' Italia, near the centre of the chain, which reaches an elevation of 9580 feet above the sea-level. Between the two great mountain chains of the Alps

Italy: area, 117,982 square miles; pop. (1921), 38,835,941. Professor Giulio Beloch, of the University of Rome, has estimated the total population of Italy in 1550 at 11, in 1700 at 13, and in 1775 at 16.5 millions. See Bollet. Soc. Geog. Ital., April 1888. Population (1871), 26,801,000; (1881), 28,460,000.

<sup>&</sup>lt;sup>1</sup> A spelling fully established in England in submission to ancient classical usage, though the Italians always write *Il Appennino* or *Gli Appennini*.

and Apennines expands a vast fertile tract, often briefly spoken of as the *Plains of Lombardy*, but in reality comprising the lowlands of the three distinct territories of Piedmont, Lombardy, and Venetia. In Sardinia, North Sicily, and in places in the west of the peninsula, are relics of the Tyrrhenian crust, which largely foundered to form the basin of the western Mediterranean. Along the margin of this submergence crustal weakness accounts for the volcanic activities of Vesuvius, Etna, and Stromboli, and the earthquakes at Messina.

### 3. The Lombardo-Venetian Lowlands

The present Lombardo-Venetian plain, including Piedmont, Lombardy, Venetia, and Emilia, occupies an area of more than 37,000 square miles, and ascends gradually towards the spurs of the mountains, which rise steeply in the north, and still more so in the west, but slope gently southwards. The small volcanic hills of the Monti Berici (1456 feet high), at Vicenza, and the Monti Euganei (1975 feet), at Padua, divide the whole region into the large or Lombardian plain on the west, and the smaller Venetian plain on the east. The former is contracted by the Monferrat Hills in Piedmont between Turin and Casale, so that the rest of the plain becomes a narrow tract, gradually rising towards the south to an elevation of 1600 feet. The Alpine valleys from the Tanaro in the south-west round to the Isonzo exhibit morainic relics from former ice-periods. End-moraines at the mouth of the Dora Baltea valley formed below Ivrea a semicircle of heights, 1000 to nearly 2000 feet above the present valley. Those belonging to the valleys of the Adige and the Mincio, which communicated with

one another, attain south of Lake of Garda<sup>1</sup> (Benacus), a height of 1200 feet above sea-level, and reach to a distance of 175 miles from the origin of the main glacier on the Oetzthal Alps. The Lago Maggiore (Verbanus), the Lake of Lugano (Ceresius), mainly in Switzerland, the Lake of Como (Larius), the Lake of Iseo (Sebinus), and other lakes of these valleys all have similar heights between them and the plain, those south of Lake Como, between the Adda and the Lambro, forming the romantic and fertile highlands of Brianza (1800 feet) now studded with the country seats of the Milanese. Like the other great Alpine lakes, those just mentioned are remarkable for their depth.<sup>2</sup>

The eastern limits of the great northern plain are fringed by a number of coast lakes or lagoons, in the midst of which rises the proud queen of the Adriatic, Venezia la Bella. A still larger lagoon lies to the south, between the mouth of the Reno and the main mouths of the Po. This is known as the Valli di Comacchio, that is, the valleys of Comacchio, from being divided up by embankments into a number of separate lagoons (the largest known as the Valle del Mezzano), which are important on account of the great quantity of

<sup>2</sup> The following particulars with regard to the chief lakes of northern Italy may be noted:—

	SU	Altitude o erface abo sea-level	ove Area.	Mean depth.	Greatest depth.	Contents.
		Feet.	Square miles.	Feet.	Feet.	Millions of cubic yards,
Orta		950	5.4	ŝ	9	5
Maggio	ı e	635	82.7	690	1220	57,500
Lugano		890	19	490	945	9,400
Como		650	60	810	1345	46,000
Iseo		610	24	490	985	11,800
Garda		210	142	1500	1135	ş

<sup>&</sup>lt;sup>1</sup> See Petermanns Mitteil. 1898, pp. 17-21. It is there pointed out that at the northern or Austrian end of this lake the shores are so precipitous that no room is left on either side for a single village or even for a road.



LAGO MAGGIORE. ISOLA DEI PESCATORI.

salt (25,000-30,000 tons annually) obtained from them, as well as for the valuable eel-culture (about 2000 tons of eels annually) carried on in their waters.

Owing to the larger quantities of detritus brought down from the Alps, and also the larger weight of water, the Po is driven over to the Apennine edges of the trough, which is but an alluvium-filled arm of the Adriatic Sea.

## 4. The Ligurian Apennines

Liguria is the still surviving classic name of the highland coast-district in the north-west of the Apennines, which with its picturesque and abrupt rocky slopes forms the far-famed Riviera di Levante on the east side of the Gulf of Genoa, while the portion on the west side of the gulf continued by the Maritime Alps forms the Riviera di Ponente or western shore—"shore of the setting sun." The Apennines here assume the aspect of a perfect coast range, such as the South American Cordilleras, or the Californian coast range; that is to say, the range approaches close to the seaboard, sinking abruptly down to the water, whereas its inland side slopes very gently towards the valley of the Po. In general the range here forms a narrow ridge of moderate elevation.

The genial climate along the Ligurian seaboard altogether rivals that of the delightful shores of the Bay of Naples, and the invalid from the north wisely seeks a winter residence in such places as Nice, Mentone (both now annexed to France), Ventimiglia, San Remo, and Porto Maurizio on the Riviera di Ponente, or Nervi, Chiavari, and Spezia on the Riviera di Levante. The vegetation also of this coast is the same as in southern Italy. In Genoa and its neighbourhood we are, in fact, in the south of Europe strictly so called, which really

MENTONE.

ITALY '63

begins where our botanical maps mark the northern limits of the evergreen sub-tropical plants.

The Ligurian Apennines, crossed by the railway in three places, follow the line of the deep bight known as the Gulf of Genoa, whose romantic and precipitous shores are also skirted by a railway carried through endless tunnels and blastings over ground mostly obtained artificially from the cliffs here sinking abruptly into the water. But as it trends eastwards the main line departs more and more from the coast in order to follow a more direct easterly course. Beyond the ridge the northern slopes lead more gently to the valley of the Po.

## 5. The Tuscan Highlands and Plains—Carrara and its Marbles—The Valley of the Arno

At the southern slopes of these eastern Ligurian Apennines there extends seawards the charming district of Lunigiana, watered by the little river Magra. Farther south, severed from the Apennines by the Vale of Garfagnana (the upper part of the valley of the Serchio) and lying between it and the coast, rise the wild and gloomy limestone hills of the Apuan Alps, with the Monte Pisanino, 6385 feet high, sloping southwards down to the Tuscan plains.

In the Apuan hills is quarried the far-famed white Carrara marble, and on their western slopes lies the town of Carrara itself, in the midst of hills thickly clothed with the olive, vine, and stone pine (Pinus pinca, L.), and towards the east shut in by a crescent of rugged marble bluffs, forming a picturesque contrast with the southern vegetation of the sea-coast. Most of the stone has a pale bluish hue, and is more or less veined, but the purest is highly valued for statuary purposes. The

marble was worked by the ancient Romans, and has ever since been prized by sculptors. It is in this material that the finest works of Michael Augelo and Canova were wrought. The geological age of this "metamorphic" limestone has been the subject of much dispute; but the officers of the Geological Survey of Italy appear to have determined that it belongs to the Triassic series.

The Etruscan Apennines we may take as beginning with La Cisa pass (3415 feet) at the head of the valley of the Magra on the road between Pontremoli and Parma, and as comprising that section of the range which takes a decidedly south-easterly course towards the Adriatic seaboard as far as the source of the Tiber at Fumajolo (4612 feet). The highest peak in this section is the Monte Cimone (7100 feet), north-west of Pistoja. The main chain of this section forms an extremely interesting part of the Apennines, and is now crossed by one of the most imposing railways in Europe, running from Bologna to Pistoja and the Tuscan plain, and attaining its highest elevation at Pracchia. Through the plain just named flows the Arno, one of the three really important rivers of Italy. Its course is mainly from east to west, though from its source at Monte Falterona (5425 feet), in the Etruscan Apennines, it makes a decided sweep to the south before finally trending westwards at Pontassieve. Below Pisa it seeks an outlet in the Tuscan Sea through the Maremma, that is, the marshy and very unhealthy strip of coast in which the Tuscan plain here merges.

The Maremma is the seat of lingering volcanic action, as abundantly attested by the numerous jets of steam and other heated vapours which issue from the ground.<sup>2</sup> Tuscany also possesses numerous mineral waters, those of

<sup>&</sup>lt;sup>1</sup> Length 140 m.; area of basin 3301 sq. m. <sup>2</sup> See below, p. 99.

Montecatini between Lucca and Pistoja being particularly celebrated and largely exported. The waters of Lucca itself are also of note. The occurrence of pebbles, of jasper, and other hard stones in the bed of the Arno has led to the manufacture of the famous Florentine mosaicwork, which is mainly composed of these *pietre dure*. Salt is largely extracted from brine in the commune of Volterra (prov. Pisa).

# 6. The Roman Apennines—The Abruzzi—The Tiber and its Tributaries—The Lake Region

Monte Fumajolo and the sources of the Tiber are the starting-point of the Roman Apennines, which reach as far as the gorge of the Tronto, an Adriatic coast stream, and whose highest and most rugged section forms the Monti Sibillini, or Sibylline Hills. With its farther continuation, the lofty chain of the Abruzzi Apennines, this range shows a striking tendency to hug the line of the Adriatic seaboard as far as Monte Amaro (9170 feet high), north-east of Sulmona. But beyond the Monti Sibillini the headwaters of the Tronto and the Aterno separate two parallel chains, the more easterly of which bears the most elevated range in the peninsular portion of the kingdom, the Gran Sasso d'Italia (9580 feet) and La Scalata, while the western chain culminates with Monte Velino (8155 feet).

This region of the higher Apennines, limited westwards by the course of the little river Salto, forms the province of the Abruzzi, which before the unification of Italy acquired an evil fame from the brigandage and general lawlessness of its inhabitants. Both the Roman and Abruzzi Apennines are furrowed by innumerable little coast streams draining to the Adriatic.

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Between the eastern slopes of the Apennines of Umbria and the Adriatic lies a strip of land, which, from having been the frequent scene of contention between neighbouring states, is known as *The Marches*. On the north it joins the Romagna, while on the south it stretches towards Monte Gargano.

The source of the Tiber 1 lies in the Apennines at no great distance from that of the Arno. The two streams. however, pursue widely different courses, the Tiber taking mainly a southerly direction, so that its mouth and source lie nearly on the same meridian, while the main direction of the Arno is westerly. The most important affluents on its left or east bank are the Nera, rising in the Roman Apennines, or, more definitely, in the Monti Sibillini, and the Anio or Teverone, which rushes from the Sabine Hills along its peculiar travertine bed over the picturesque falls of Tivoli, joining the main stream a little above Rome. On the right bank is the Chiana, connected by a canal with the Arno. The Arno and Tiber thus form two sides of a triangle, resting on the western seaboard as its base, the whole space being occupied by a very diversified highland country, which is intersected by the Ombrone, the most important coast stream between the two main rivers.

The heights between the Arno and the Ombrone are chiefly known as the Tuscan Hills, while between the Ombrone and the Tiber there is a volcanic area with hills and mountains, among which rises the lofty trachytic mass of the Monte Amiata, 5690 feet high—the highest mountain of volcanic origin on the Italian mainland. Between these volcanic highlands and the main chain of the Apennines there lies in the north Lake Trasimene, or the Lake of Perugia, besides the

<sup>&</sup>lt;sup>1</sup> Length 199 m.; area of basin 6847 sq. m. (Strelbitsky).

neighbouring lakelets of Chiusi and Montepulciano, the latter famous for its vintage. Trusimene, whose banks are memorable for the victory of Hannibal over the Romans under Flaminius in 217 B.C., is a shallow lake, only a few feet in depth. Formerly its stagnant waters, having no adequate outlet, poisoned the air around, but, owing to the long-continued advocacy of Cav. Guido Pompili, an outlet was at last opened on October 2, 1898; and by this it is estimated that the area of the lake will be reduced from about 46 to 42 square miles, 2500 acres being made dry land, and an equal extent reclaimed from the condition of malarial swamp. Lake Fucino, formerly a larger and much deeper piece of water, without a natural outlet, lying farther south, is now completely drained. It covered about 55 square miles—much more in flood. By means of a tunnel 6170 yards in length, the Emperor Claudius in the first century endeavoured to keep it within due limits. The work afterwards fell into neglect, but the lake was at last drained, and its bed made fit for cultivation by Prince Torlonia between 1854 and 1876.

The volcanic area which begins in the north with Amiata is interrupted to the south of that mountain, but only for a short interval, and then stretches continuously southwards for about 90 miles, extending westwards nearly to the coast, while in the east it forms the west side of the deep valley of the Tiber from the mouth of the Paglia, where the main stream is forced to turn southwards, to the point where it washes the base of the isolated hill of Monte Soratte (Soracte). On these heights are several roundish lakes, which are generally regarded as occupying the craters of extinct volcanoes.

The Lake of Bolsena, the ancient Lacus Volsiniensis, is described as a genuine maar, like those of the Eifel

(p. 485), the ejecta of which consisted solely of fragments of the overlying crusts.\(^1\) It covers an area of 44 square miles, and having a depth of 480 feet, empties its surplus water through the river Marta into the Mediterranean. The Lake Bracciano, the ancient Lacus Sabatinus, is drained by the Arrone. Between the two is situated the Lago di Vico, the ancient Lacus Ciminius, at the altitude of 1665 feet, an undoubted crater lake, now about  $4\frac{1}{2}$  square miles in extent, but before its level was reduced by an artificial cutting about  $6\frac{1}{2}$  square miles in area, and completely surrounding the central cone of Monte Venere.

Among the volcanic rocks of Albano, on the south side of the Tiber, is the Lake of Albano, occupying about  $2\frac{1}{2}$  square miles, at the height of 265 feet, and having a depth of 560 feet. It is notable that a small crab inhabits this lake, thus suggesting former communication with the sea, though the water occupies the site of an old crater. Close to it is the small Lake of Nemi. Both of these Alban lakes are eased of their surplus waters by artificial tunnels, that draining the Lake of Albano being ascribed by tradition to the beginning of the fourth century B.C.

## 7. The Campagna

The Campagna di Roma is distinguished alike for its picturesque beauty and historic grandeur. A solemn calm, of late years broken from time to time by the shrill whistle of the locomotive, broods over this richly-coloured soil of the classic Latium. The Campagna, however, must not be regarded as a perfectly level plain, although extensive tracts of the Ager Romanus bear this character.

<sup>&</sup>lt;sup>1</sup> See Jour. of Geol. 1896 and 1897.

Elsewhere it rolls considerably, the simple but noble lines of these undulations presenting a pleasant contrast to the monotony of the more level districts. The prospect southwards is limited by the marvellous outlines of the volcanic Alban Hills, culminating with Monte Cavo. Towards the east the gaze is arrested by the limestone



REMAINS OF THE AQUA CLAUDIA.

walls of the Sabine heights, whilst in the near distance the interminable arches of the Aqua Claudia impart to the Campagna its peculiarly grand and uniform character.

Overhead this ravishing picture is canopied by that blue Italian sky which is not only at certain seasons of a sharper and more lovely hue, but also seems higher and more expansive than is ever the case in more northern latitudes. The Italian horizon, also, is clearer, and suffused by a white light, forming a beautiful background to the objects rising in the far distance, which thus seem to be sharply outlined when contrasted with their appearance in our hazier atmosphere. As far as the eye can reach, it detects nothing in the Campagna except pasture-lands, the only animated figures in the landscape being the flocks of sheep or goats grazing on the slopes, with the solitary form of a shepherd in their midst. Here and there may also be seen a few wretched-looking horses, enjoying total freedom; and when unusually favoured by good luck, the traveller may perhaps meet a few mounted Campagnoli, with their never-failing iron-tipped staves and goat-skin nether garments. A rising ground is occasionally crowned with a little shady grove of the Italian evergreen oak (Quercus ilex), though this is always a rare phenomenon in the bare, treeless, sunlit Campagna. But, on the other hand, there everywhere rise amidst the broad expanse ruins and shapeless fragments, whose weird and often inexplicable forms speak eloquently of the past. Occasionally, also, a solitary pine spreads its noble fan-like branches over the grave of buried memories, or else the deep foliage of the laurel glitters amongst the mouldering ruins. In the centre of this charmed spot stands the Eternal City, overtopped by the all-commanding dome of St. Peter's.

Even in ancient times this region, though well cultivated, was not altogether healthy, but the devastations of Goths, Lombards, and other invaders, and still more the neglect of cultivation during the Middle Ages, when continual disorders drove the inhabitants to seek protection in towns, gradually caused it to relapse into a state of nature, and repeated inundations of the Tiber, obstructed by its own sediment, at last converted it into a waste absolutely uninhabitable during four months in summer. Attempts at amelioration are being made

by the regulation of the river and the planting of eucalypti.<sup>1</sup>

# 8. The Pontine Marshes—The Sabine, Alban, and Volscian Hills—Naples

Towards the west the Roman Campagna merges into the equally unhealthy *Marittima*, stretching along the coast, whose southern extension in the direction of Terracina forms the *Pontine Marshes*, anciently called the *Pomptinæ paludes*, so named, it is said, from the old town of Pometia, which is no longer in existence. They extend along the west side of the Monti Lepini, or Volscian Hills, over an area of 130 square miles, but spread a malarial poison over more than 200 square miles beyond. This tract is utterly without inhabitants except some thirty people occupied at the post-stations of the Appian Way which traverses it in a straight line from near Velletri to Terracina; but amelioration works on the sedimentation principle <sup>2</sup> have been set up in the basin of the Amaseno in the southern part of the marshes.

Farther inland, east of the Monti Lepini, rise the Sabine Hills, a western offshoot of the Apennines, but severed from them by the valley of the Velino and its tributary the Turano, and farther south by the head stream of the Liri. They are divided into two sections by the valley of the Aniene or Teverone, the ancient Anio. The northern section, stretching northwards to the Nera, near Terni, forms the Sabine Hills in the narrower and stricter sense, while the southern section may be named after the ancient tribe of the Hernici. The latter section is the higher, attaining near the sources of the

<sup>&</sup>lt;sup>1</sup> See Sombart, Die Römische Campagna.
<sup>2</sup> See below, p. 101.

Liri an altitude of more than 6000 feet, but the height of the Sabine Hills proper is rendered more striking by the abruptness with which they rise from the high volcanic plains to the west. In the Monte Gennaro the ancient Mons Lucretilis, so conspicuous in the views looking north or north-east from Rome, they attain the height of 4170 feet.



TIVOLI.

 $Photocrom\ Co.-Photo.$ 

Reclining on the lower slopes of this mountain, where the Aniene thunders down in magnificent falls, lies the famous town of *Tiroli*, the ancient Tibur; the place where Horace longed to repose in his later years, where in his day the wealth and intellect of Rome retired from the noise and bustle of the city to seek refreshment in the "moist shadowy coolness" and the sight of the beauty and fertility that here surrounded their country

seats. Higher up in the very heart of the hills of the Hernici nestles the no less famous town of Subiaco, a corruption of the ancient Sublaqueum, the town built below the artificial lake (sub lacum) or rather lakes (no longer in existence), in which the water of the Anio was collected to feed one of the aqueducts that supplied Rome with its drinking-water, and where afterwards was built the villa of Claudius and Nero. All these hills are composed of a limestone which has been dissolved in large quantity by the rains and redeposited in many parts in the beds of the rivers in the form of a reddish rock. That deposited below Tibur in the Anio by means of which it could easily be floated to Rome has furnished that city with some of its most important building material, known anciently, from the place of its occurrence, as Lapis Tiburtinus, and now as travertine, a corruption of the adjective in this designation. Even in the sixteenth century the Aniene, after its bed had been cleared, could be used in the same way to convey blocks of travertine for the building of the church of St. Peter's About 4 miles above Terni this stone forms a natural bridge over the Nera, like the well-known one at Clermont in Auvergne.1

At Terni itself the waters of the Velino (Avens) in escaping into the Nera form the celebrated Cascate delle Marmore, Marble Falls, plunging down upwards of 300 feet in one leap, and descending in all 650 feet.

South of the *Volscian Hills* or Monti Lepini spreads the fertile plain known as the *Campagna Felice*, the ancient Campania, corresponding to the modern province of Naples, with the adjoining plains forming part of the province of Caserta on the north and east, and part of

<sup>&</sup>lt;sup>1</sup> See Petermanns Mitteilungen, 1881, p. 329.

that of Salerno on the south. From the earliest period of recorded history this exuberant plain, enriched by the ashes of Vesuvius, on which there is now crowded a denser agricultural population, and on which are dotted



TERNI: CASCATE DELLE MARMORE.

more towns of 3000 inhabitants and upwards than in any other part of Europe, has been one of the great seats of Italian commerce, centring now in one scaport, now in another.<sup>1</sup>

On the lovely seaboard at the foot of Vesuvius, on which

See below pp. 114-21.

an almost unbroken line of townships stretches from Castellamare onwards, and even the neck of land separating the Bay of Naples from the Gulf of Salerno, and



NATURAL ARCH AT CAPRI.

ending with the Punta della Campanella, is dotted with pleasant suburban retreats.

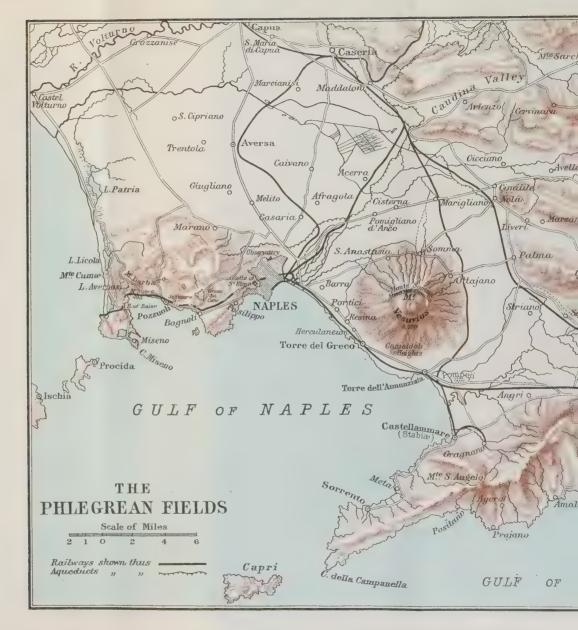
Facing the Punta della Campanella lies the rocky island of *Capri*, with its marvellous "Blue Grotto." At the opposite horn of the beautiful Bay of Naples are the volcanic islands of *Procida* and *Ischia*.

# 9. The Phlegræan Fields -- Vesuvius -- The Southern Apennines

Ischia—the ancient Pithecusa—was the seat of volcanic activity in very early times, as recorded by Strabo and other classical writers. Its central point, the volcanic hill of Epomeo, rises to a height of 2590 feet. The continuance of the volcanic activity is shown by the constant ascent of hot vapour at certain places (fumarole), and it is a curious fact that two tropical plants, a fern and a cyperaceous plant, elsewhere unknown in Europe, grow in these spots under favour of the warm soil and exceptionally heated atmosphere. The action of subterranean forces is likewise manifested by frequent earthquakes. The little isle of Procida (Prochyta) lies between Ischia and Cape Miseno, at the head of the Bay of Baia. In all the area around this bay the marks of volcanic action are so evident that the district is commonly known as the Campi Phlegrai, or the "Burning Fields." This region extends as far as the wooded mass of Posilippo, a little to the west of Naples. Many of its extinct craters have been converted into lakelets, and in this chaotic district the fancy of the ancients placed the entrance to the lower regions.

Lake Avernus, between Pozzuoli and the west coast, is a sheet of water about half a mile in diameter, which occupies one of the old volcanic craters and is now surrounded by an artificial wall. Adjoining, on the south-east, is the conical hill known as Monte Nuovo, or "The New Mount," a hill 455 feet in height, formed in a few hours on Sept. 29-30, 1538, when the traces of

<sup>&</sup>lt;sup>1</sup> See "The Phlegrean Fields," by R. T. Günther, in *Geog. Jour.* vol. x. pp. 412 et seq., and 477 et seq., with maps and illustrations.





the ship-canal by which Agrippa had connected Lake Avernus with the sea were totally obliterated. Near Monte Nuovo is the larger but similar cone of *Monte Barbaro*, once celebrated for its wines.

The three marble columns still standing in the ruins of the so-called "Temple of Serapis," on the Bay of Baie, have often been appealed to by geologists in evidence of the oscillation of the ground in this volcanic area.

Proof of subdued igneous activity is strikingly afforded by the vapours of the Solfatara, which is stated to have been in eruption in 1198. The name solfatara is now applied to all hot springs emitting a mixture of aqueous and sulphurous vapours, and depositing sulphur at their mouths. Originally, however, the term was limited to the old crater at Pozzuoli, from the bocca grande or lowest depths of which hot exhalations, with a temperature of from 208° to 339° F., are discharged with great force. In these vapours Deville detected steam, oxygen, nitrogen, carbonic acid, sulphurous acid, and sulphuretted hydrogen. It is in volcanic districts also that chiefly occur the mephitic or carbonic acid fumes known as mofette. term was originally the local name for the temporary exhalations of carbonic acid following on the eruptions of Vesuvius in the neighbourhood of Naples. Owing to its greater specific gravity this deadly gas remains in the depressions of the ground, in caves, and in valleys. The best known of these mofette is that of the Grotto del Cane, near the site of the former Lake Agnano, which was drained off in 1870.

A little to the east of the Phlegræan Fields, and almost in the centre of the beautiful Bay of Naples, rises the volcano of *Vesuvius*—a flattened conical mountain, 4013 feet in height. On three sides the cone is encircled by a ridge known as *Monte Somma*, while the intervening

valley is distinguished as the Atrio del Carallo. The hill of Somma represents the rim of an ancient crater, which was probably broken through by the great eruption of 79 A.D. Prior to this date the volcanic nature of Vesuvius had not been generally recognised, though for several years previou by the surrounding district had been shaken by repeated earthquakes.

The first recorded eruption—that of 79 A.D.—was witnessed by the elder Pliny, who, being then stationed in command of the Roman fleet at Misenum, was attracted by the phenomena, and approaching too near to the scene, lost his life in the volcanic exhalations. His nephew, the younger Pliny, has left an account of the eruption in the letters which he addressed to Tacitus. It was during this volcanic outbreak that the populous cities of Herculaneum and Pompeii, with the small town of Stabiae, were overwhelmed and completely destroyed. The catastrophe was occasioned not by streams of lava, or molten matter, but rather by showers of ashes and streams of volcanic mud, which rapidly buried the ill-fated cities, and so completely protected their contents that the relics which have been exhumed present an unexampled state of preservation.

Since the earliest recorded eruption just referred to, Vesuvius has frequently been the scene of volcanic activity, and the shape of its cone has been subject to repeated alteration. An observatory has been erected on the mountain; and a railway now conveys the visitor to the summit.

## 10. Southern Italy

In southern Italy the great range of the Apennines becomes irregular, the main section of the Neapolitan

Apennines gradually approaching so perceptibly to the west or Tyrrhenian coast that the peninsula of Otranto, the ancient Calabria, seems like a lowland country when compared with that of the west, to which the name of Calabria has been transferred, and which is traversed in its entire length as far as Cape Spartivento by the Calabrian Apennines. The core of the swelling in the north of the modern Calabria is formed by the rugged mountain mass of La Sila, which is connected by a narrow ridge running along the west coast with the mountains of Basilicata, the valley of the Crati (Crathis) lying between. The name of La Sila, no doubt connected with the Latin silva, has formed a true description of these highlands from ancient times down to the present Their forests of tall trees were among the most valuable of the acquisitions of the Roman republic on the subjugation of Bruttium, and they are still in a large measure state domain, furnishing building material for the royal navy. Now, as in all previous ages, they form the retreat of lawless brigands. "It is remarkable," says Nissen, "that that part of Italy which was first exposed to the influences of civilisation, is the last to be subdued by those influences." 2

On the south, the highlands of La Sila descend to the low isthmus of Catanzaro, but south of that the mountains again rise until they terminate in the heights of Aspromonte <sup>3</sup> ("rugged mountain"), just behind the isthmus of Reggio.

The territory of Otranto or *Apulia* is a coast region of no great elevation, poor in water, but rich in Cretaceous

<sup>&</sup>lt;sup>1</sup> Here on the southern frontier of the province Dolcedorme, 7450 feet, Monte Pollino, 7375 feet.

<sup>&</sup>lt;sup>2</sup> Ital. Landeskunde, i. p. 246.

<sup>3</sup> Montalto, 6420 feet.

limestone, the ground rising continually as we proceed westwards. In times geologically quite recent, probably as late as the middle of the Pliocene epoch, this southern section of the Italian peninsula was divided by straits into six islands. One strait connected the Campanian Gulf with the Adriatic south of Gargano. Others connected the Tyrrhenian Sea with the Ionian through its gulfs both at the isthmus of Catanzaro and that just north of Aspromonte, while a lateral breach isolated the heights of Poro on the west between these two isthmuses, and a longitudinal channel cut off Gargano and Le Murgie or the tablelands of Apulia, with their adjoining lowlands. These latter tracts, nevertheless, both in their geological structure and present physical aspect reveal their intimate relationship to the Apennines. In both occur hippuritic limestones of similar character, and even in the more distinctly mountainous regions of the peninsula are numerous more or less tabular masses not unlike the tablelands of Gargano and Apulia.1

### 11. South Tirol

The Tirol takes its name from a castle above Meran which appears in the Notitia Dignitatum of the Roman empire about 400 A.D. under the form Teriolis. The counts who had their seat here gradually extended their sway over most of the territory now so called, access to the different parts of which was afforded by the valleys of the Etsch, Eisack, and Rienz, with the passes leading from the two former to the north.

The Tirol is as much as Switzerland a land of lofty mountain peaks, snow-fields and avalanches, glaciers and

<sup>&</sup>lt;sup>1</sup> See Geog. Journ. vol. x. p. 633, and the articles on which this note is based in Petermanns Mitteil. 1897, pp. 193-197, 218-221.

torrents, and is scarcely second to Switzerland in the grandeur and picturesqueness of its scenery. The central zone of the Alps passes through the province from west to east, dividing it into northern and southern halves, the former with a severe climate, belonging to the basin of the Danube, the latter with a climate resembling that of the northern valleys of Italy, and mostly drained by the Etsch (Adige) into the Adriatic. A no less important feature is a line of valleys, the Etsch and Eisak on the south, the Wippthal traversed by the small river Sill on the north, running north and south through the middle of the province, separated only by the lowest pass in the heart of the Alps, namely, the Brenner, 4470 feet. Even in Roman times a paved road followed this line, which has the advantage of enabling one to cross the entire system of the Alps from the northern plain of Italy to the plains of southern Germany 2 by ascending to only a single pass; but, while the pass has at all times been of great importance, the difficulties of parts of the route arising from the narrowness of the gorges which it traverses, and their liability to be obstructed in places, has caused different routes to be preferred in approaching it from the south. The part of the route between Bozen and Brixen (that is, the lower part of the valley of the Eisack) was specially liable to suffer in this way. In the thirteenth and fourteenth centuries it was frequently wholly impassable, which caused the pass to be approached on the one side by the Passeierthal, leading from Meran north-eastwards to Sterzing, although this involved the crossing of a higher pass than the Brenner (the Jaufen Pass, 6870 feet), and on the other side (from Venice) by the Ampezzo road and the Pusterthal, which

<sup>&</sup>lt;sup>1</sup> Alt. station, 4495 ft. <sup>2</sup> See above, pp. 533-5.

joins that of the Eisak above Brixen. It was across this pass that the first trans-Alpine carriage road in the modern style was laid (1772), and the first trans-Alpine railway (1867).

The Brenner Pass, with the valleys leading up to it, divides the *Zillerthal Alps* (which are only the western portion of the Hohe Tauern) on the east from the



THE BRENNER RAILWAY AND PASS.

Stubici, Sarnthal, and Octzhal Alps on the west, the Passeierthal cutting off the Sarnthal group from the other two. In the west the Octzthal Alps are almost completely cut off from the Rhætian Alps by the Inn and one of its tributaries on the north, and the headwater of the Adige on the south, the two basins being separated by the Reschenscheideck (4890 feet). In the Middle Ages this pass also was largely used, no doubt in consequence of the difficulties of the Brenner route, but

now it is chiefly used in connection with the Stelvio Pass and the Valtelline route to Lake Como and Milan, and no railway follows it.

South and west of the valley of the Etsch are the Ortler Alps and the Adamello group on the borders of Lombardy and the Alps of Trent, north of the Lake of Garda, the first of these groups, situated immediately to the south of the Vintschgau or the upper part of the valley of the Etsch and directly in front of the Oetzthal Alps, containing the highest peak of the province, the Ortlerspitze, which reaches the height of 12,810 feet. East of the lower Etsch, which here already flows through an Italian-speaking district, and is hence known as the Adige, are the Dolomite Alps, where the close juxtaposition of easily weathered marly deposits and hard dolomites, both belonging to the Upper Trias, has caused the rapid alternation of bare steep-sided plateaux and peaks with forest-clad or grassy valleys and high plains. These are specially striking to the east of Bozen between the Eisack-Adige and the Fassa valleys, and still farther east, where the dolomites attain their highest altitude, 11,020 feet, in the Marmolate group on the borders of Venetia.

Trent, the ancient Tridentum, on the Adige (see p. 96) at the point where an old route from Venice through the Val Sugana comes in from the east, still possesses an old castle, formerly the residence of its prince-bishops, a cathedral begun in 1212 and completed in the 15th century, the Church of Santa Maria Maggiore, in which the council summoned to settle the disorders due to the Reformation held its sittings (at intervals from 1545 to 1563), and several old palaces, including one built in 1581 by one of the Fuggers (p. 535).

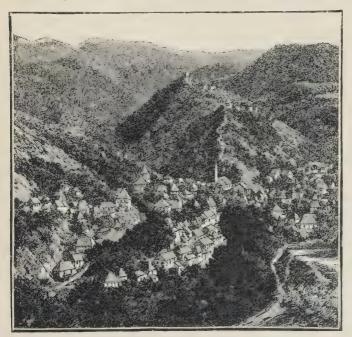
<sup>&</sup>lt;sup>1</sup> (Trent), pop. (1869) 17,000; (1921) 35,000.

#### 12. The Carso and Istria

In the north-east there begins a region known as the Karst, which is one of the most remarkable in Europe in respect of its physical features. By the term Karst, or, as it is called in the Italianised form of the word. Carso, is more particularly understood the limestone stretching from the mouth of the Isonzo, in the Gulf of Trieste, to the Gulf of Quarnero in the Adriatic. It thus includes portions of Carniola and the so-called coast-land with the Adriatic peninsula of Istria; but in a wider sense the term is applied to the whole mountain range which forms the connection between the Alpine and Thraco-Illyrian mountain systems, and under the name of the Julian, and farther on of the Dinaric Alps, is often regarded as forming an integral portion of the latter, as well as to many parts of the area belonging to Croatia and Dalmatia on both sides of that range.

In its more limited application the Karst is a stony desert lying to the north and the south of Trieste, an expanse presenting a scene of utter desolation in striking contrast both to the verdant region from which one emerges upon it in coming from the north, and also to the richly wooded coasts which here border the Adriatic. It is a region of limestone rocks thrown into wide folds, synclines and anticlines, the tops of which sometimes have the aspect of minor plateaux and sometimes of successive terraces. But the peculiar physical characters of the region are due to the way in which the rocks have been acted on by atmospheric agents. The rock is full of fissures and underground caverns. The rain that falls upon it does not trickle down to the lowest line in a valley and then flow away as a river, but disappears underground through the numerous fissures; or if a river

is formed, it remains above the ground for only a comparatively short distance, and then disappears to continue its course as an underground stream till it manages to escape again by some other fissure lower down. Frequently it does not do so till it reaches the coast,



A TOWN ON THE KARST.

and sometimes it only re-emerges under the sea, giving rise to a submarine spring. In consequence of the great amount of underground erosion that has thus taken place the ground has frequently given way, so that numerous trough-like depressions, called by the Slavonians dolinas, have been formed. There the water is able to linger for a longer period than on the surface, and hence the

bottoms of these dolinas acquire a tolerably thick soil and a rich vegetation. Mostly, however, the dolinas are only large enough to accommodate a few trees at their bottom, although here and there such trough-like depressions occur of sufficient size to contain an entire village surrounded by fields and orchards.

Of the caverns of this region, which contain a peculiar species of Batrachian known as *Proteus anguinus*, with permanent external gills and eyes covered with the skin, the most celebrated is that of Adelsberg, at the foot of the Julian Alps, 24 miles in a direct line south-west of Laibach.

Not far from this cavern is the no less celebrated Lake of Zirknitz, which illustrates in a striking manner another consequence of the peculiar underground structure of this region. For a number of seasons together the bed of this lake may remain quite dry and be used for cultivation, while at other times it is occupied by waters teeming with fish. On a smaller scale the same phenomenon is observed in numerous other lakes of the region, lakes that are much smaller in size, and hence more rapidly and more frequently filled and emptied. The phenomenon is due to the fact that the underground outlets for the superficial water are sometimes comparatively empty, sometimes overflowing. In the former case the fissures communicating with these periodical lakes serve as channels to lead away the water, in the latter as vents to pour it on the plain.

Another phenomenon of the same region is the bora, the violent wind already described in the Introduction. It is partly in consequence of this wind that the desolate character of the region is maintained. It carries away almost every particle of soil which the unfavourable conditions of the surface allow to be formed; it hurts vegetation where vegetation is possible; and it absolutely

prevents the growth of trees in every spot not sheltered from its fury.

Such are the conditions which prevail throughout the Karst proper; but similar conditions are found in many parts of the wider region above indicated, and for that reason the name has been extended to them also. These areas were not always in this condition. In the time of the Romans the whole region was well wooded, and there are data to prove that the conversion of productive land into a stony desert began in certain parts only from 150 to 300 years ago. The presence of woods over large areas is an essential condition for the formation and preservation of a surface layer of soil, and the destruction of woods through fires, through the keeping of goats, which destroy the young trees, and in other ways, has now gone on for generations, resulting in the present condition of the district.

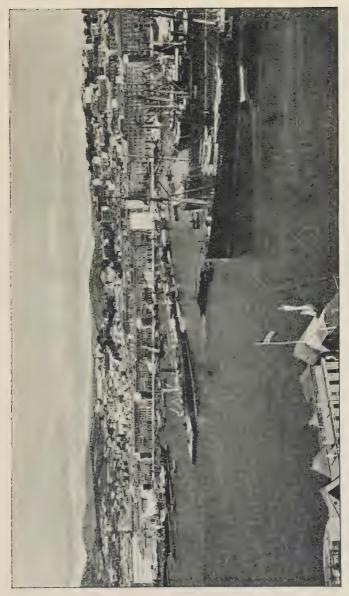
Karst phenomena are common wherever soluble limestone permits underground erosion by subterranean streams; it may be studied in the Carso, in Herzegovina, or in the region of the *Causses* in Central France. Four stages of erosion are recognised; <sup>1</sup> from the earliest, when a normal river system has worn down through the rock until it has reached the limestone and the rivers tend to disappear, to the latest, when the limestone has been worn away except for residual knobs which are honeycombed with caves, and when the rivers again flow on the surface of impervious rock. During the process of evolution the sink-holes or dolinas create depressions in the surface, and in course of time several such depressions join to form a depression with a long axis along the stream line, a *polje*; in some cases, however, poljes are due to surface folding.

<sup>&</sup>lt;sup>1</sup> For a summary of the subject see "The Cycle of Erosion in a Karst Region," by E. M. Sanders, *The Geographical Review*, Oct. 1921, pp. 593-605.

Trieste, as it is more properly called, being an Italianspeaking town, in German Triest, formerly the chief seaport of Austria, the headquarters of the Austrian Lloyd's, is another town of ancient date, but anciently far inferior in importance to another seaport that has now ceased to exist as such, and has sunk into an insignificant village with only ruins and memories of its former greatness. That seaport was Aquileia, a colony founded in 182 B.C. It rose in importance as the Roman empire extended on the east and north. Towards the end of the fourth century A.D. it is spoken of by Ausonius as the ninth among the large cities of the Roman empire. But in 452 it was destroyed by Attila. This and other concurrent events put an end for the time to the importance of the communications between east and west, and by the time that a more settled condition was restored, the port had lost all power of recovery. The coast was silted up. Aquileia had become an inland village, deprived of navigable water by the change in the course of the Isonzo, which once flowed past the city, but since 1490 has entered the sea farther to the east.2 Hence Venice in Italy and Trieste formerly in Austria have come to replace the ancient port that united the functions of both. Trieste, the Roman Tergeste, which is believed to be derived from an Illyrian root terst, meaning "reeds," occupies partly a narrow strip of shore, partly the heights above on a small bay at the south end of the gulf of the same name. The site is in many respects incon-

<sup>1</sup> (Trieste), pop. (1869), 109,000; (1890), 145,000.

<sup>&</sup>lt;sup>2</sup> In Roman times it would appear to be probable that a still greater volume of water was carried past Aquileia, owing to the fact that the present headwater of the Isonzo then belonged to the Natiso, which then flowed past Aquileia, but now under the name of Natissone forms a tributary of the Torre, which is itself a tributary of the Isonzo.—See Mittheil. der k.k. geog. Gesell. Wiens, pp. 50, 51.



IRLESTE,

venient, but there is none on the Istrian coast without some defect. Till the construction of a breakwater in the seventies the roadstead was far from safe. If the route up the Isonzo valley had been easier than it is, it would have been worth while to make a port at the north end instead of the south end of the gulf. Duino, where there is ample depth of water, would then have been a more favourable site for a port than Trieste, but so much has been spent on the latter port that probably even a railway over the Predil (3810 feet) would not now displace it from favour. In any case the laying of such a railway would present great difficulties, owing to the narrowness of the defile above Görz between Salcano and Descla, and again between Canale and Sella, where the road has been brought into such a condition as to be easily used by carriages only in quite recent times. The town enjoyed the privileges of a free port from 1719 to 1891. Of late years its trade has declined, partly through the rivalry of its former Hungarian rival Fiume, partly in consequence of the loss of those privileges. Pola, formerly the chief naval station of Austria, is on a fine natural harbour near the south end of the Istrian peninsula, and has existed under the same name for perhaps three thousand years.

# 13. Hydrography—The Po and the History of the Po Basin 2

The northern plain of Italy, whose area is estimated at about 16,450 square miles, or about half that of Scotland, is a geographical unit of the most unmistakable kind. By far the larger part of the area belongs to the basin of the Po, and the rivers that do not belong to that basin present a general parallelism to the tribu-

 <sup>(</sup>Pola), pop. (1869), 10,500; (1890), 32,000; (1921), 50,000.
 Length of river 354 m.; area of basin 28,923 sq. m.

taries of the Po. The general slope of the plain is that indicated by the course of its main river, from west to east, but there is also a slope from north to south, and another from south to north, determining the general direction of at least the upper portions of the numerous affluents descending from the Alps and the Apennines. But before reaching the main stream, these affluents are affected in their general direction by the general easterly slope of the plain; that is to say, their course changes more or less to south-easterly (Dora Baltea, Sesia, Ticino, Adda, Oglio, Mincio), or north-easterly (Tanaro, Scrivia, Trebbia, Taro, Secchia, Panaro), and the farther east they are the larger is the proportion of the entire course deflected in this manner. In the most easterly portions of the plain, lying west of the Adriatic, so marked is this effect that the rivers (Adige, Brenta, Piave, Livenza) are carried to the sea before reaching the Po. North of the Adriatic the slope and the general direction of the rivers (Tagliamento, Stella, Cormor) become wholly southerly.

Since ancient times the Po has been recognised as rising at the height of 6400 feet in the marshy valley of Piano del Re at the foot of Monte Viso, the ancient Vesulus, and after a course of only 21 miles and a fall of 5250 feet, it enters the plain at the bridge of Revello, where its middle course may be said to commence. Fed by the "aged snows" of the Alps, and by the heavy rains of the Alps and Apennines, it is already at Turin, where it receives from the west the Dora Riparia, a navigable stream with a width of 525 feet. At the mouth of the Ticino, the outlet of the Lago Maggiore, its lower course may be said to commence. Thence onwards it winds sluggishly across the great plains of

Fruitful Lombardy,
The pleasant garden of great Italy,



THE PO AT TURIN, WITH THE SUPERGA AND THE BASILICA DEDICATED TO THE VIRGIN MARK.

with a mean depth of about  $6\frac{1}{2}$  to  $15\frac{1}{2}$  feet, and a fall not exceeding 1 in 3000, so that its waters could hardly move onwards were it not for the impetus imparted by the numerous mountain torrents which it receives at an acute angle. At last, charged thick with sediment, it passes onward through the mouths that intersect its muddy delta into the Adriatic.

In this part of its course, artificial embankments have been found necessary to protect the surrounding country from inundation, and from Cremona onwards these dykes, in part of unknown antiquity, are continuous. After receiving the Mincio, the last tributary on the north, the Po assumes a south-easterly direction, which, in ancient times and during the Middle Ages down to about 1150, it maintained to its mouths, passing Ferrara on the south, and then dividing into two main arms, the Po di Volano to the north, and the Po di Primaro to south of the Valli di Comacchio. But about that date, it is said, the people of Ficarolo cut the dyke on the north side at Stellata, and thus gave rise to a new mouth, known first as the Po di Venezia, now as the Po della Maestra, by which the entire volume of the river now runs eastwards, till it breaks up into several small branches at the delta. Since then the arm of the Po between Stellata and Ferrara has become silted up. Since 1577 the Panaro which formerly entered this arm at Ferrara, has gradually moved its mouth backwards till it enters the main stream just below Stellata. The Po di Volano, which, in the second century B.C., was the most accessible mouth for shipping and afterwards the main mouth, has now become wholly detached from the Po, and merely serves as a drainage canal for the surrounding marshes, while the Po di Primaro has been utilised since 1770 as the mouth for the regulated Reno. Long before the historic period, tens of thousands of years ago, but which geologists call recent, the great valley was an arm of the sea; for beneath the gravels and alluvia that form the soils of Piedmont and Lombardy, sea-shells of living species are found in well-known unconsolidated strata at no great depth. At this period the lakes of Como, Maggiore, and Garda may have been fiords, though much less deep than now. Later still, the Alpine valleys through which the affluents of the Po run were full to the brim with the huge old glaciers already referred to.<sup>1</sup>

When we consider the vast size of the moraines shed from the ancient glaciers that fed the Po, it is evident that at all times, but especially during floods, vast havoe must often have occurred among the masses of loose débris. Stones, sand, and mud, rolled along the bottom and borne on in suspension, must have been scattered across the plains by the swollen waters.

It will thus be easily understood how the vast plains that bound the Po and its tributaries were gradually formed by the constant annual increase of river gravels and finer alluvia, and how these sediments rose in height by the overflow of the waters, and steadily encroached upon the sea by the growth of the delta. The fact that the drainage line of the plain lies not in the middle but farther from the Alps than the Apennines, shows that in this process the loftier range on the north has contributed more than the lower one to the south. And this process, begun thousands of years before history began, has largely altered the face of the country within historic times, and is powerfully in action at the present day.

It has been estimated by Sir Archibald Geikie that the area drained by the Po is on an average being lowered

one foot in 729 years, and a corresponding amount of sediment carried away by the river.

It is hard to get at the historical records of the river more than two thousand years ago, though we may form a good guess as to its earlier geological history. Within the historical period extensive lakes and marshes (some of them probably old sea lagoons) lay within its plains, since gradually filled with sediment by periodical floods. The great lines of dykes that have been erected to guard against those floods have introduced an element that modifies this process. The result has been that the alluvial flats on either side of the river outside the dykes have for long received but little addition of surface sediment, and their level is nearly stationary. It thus happens that most of the sediment that in old times would have been spread by overflows across the land is now hurried along towards the Adriatic, there, with the help of the Adige, steadily to advance the far-spreading alluvial flats that form the delta of the two rivers. But the confined river, unable by annual floods to dispose of part of its sediment, just as the dykes were increased in height, gradually raised its bottom by the deposition there of a portion of the transported material, so that the risk of occasional floods is again renewed. All these dangers have been much increased by the wanton destruction of the forests of the Alps and Apennines, for when the shelter of the wood is gone, the heavy rains of summer easily wash the soil from the slopes down into the rivers, and many an upland pasture has by this process been turned into bare rock. In this way it happens that during the historical period the quantity of detritus borne onwards by the Po has much increased; and whereas between the years 1200 and 1600 the delta advanced on an average only about 25 yards a year, from 1600 to

1800 the annual advance has been more than 75 yards. Between 1823 and 1893 the deposits advanced on an average 260 feet yearly. The area of the Po delta has increased within that time by  $20\frac{1}{2}$  square miles, and that of the whole coast from  $44^{\circ}$  20' to the Isonzo mouth by 29.8 square miles. In this fashion is continued in modern times the filling in of the original depression between Alps and Apennines.

Besides the Po and some of its chief tributaries, the Adige<sup>2</sup> is the only river in the northern plain of Italy of importance as a waterway; and even it, though navigable for vessels of considerable size, as high as Trent in the Tirol, where there is a depth of from 13 to 16 feet, is navigable only with great difficulty in consequence of the great rapidity of its course. Boats can descend from Trent to Verona (50 miles) in twenty-four hours, but for the ascent require from five to seven days. The country on the banks of this river is much subject to inundations, protection against which is afforded, as on the Po, by dykes, which begin about 12 miles below Verona.

## 14. Geology

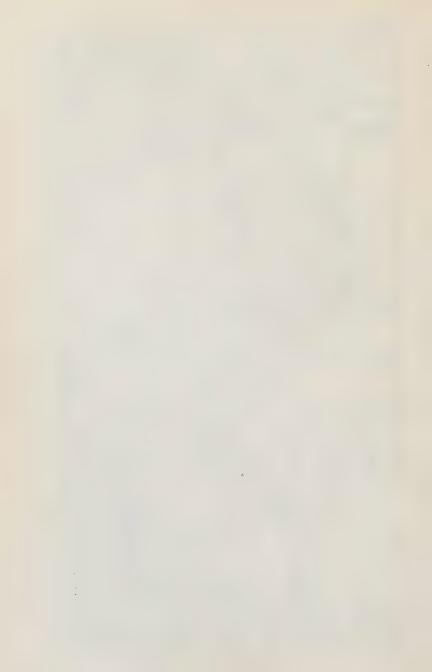
The three areas into which Italy is sharply divided by nature correspond with, and in fact are due to, as many well-marked geological districts. There is first the mountainous region of the Alps in the north and north-west, which is really part of the great mountain system of central Europe, with which it can be best studied; secondly, the vast alluvial plain of Venetia and Lombardy, prolonged to the west and south into

 $<sup>^{1}</sup>$  See Petermanns Mitteil. 1898, Litteraturber. p. 38, and as to the advance since Roman times see above p. 4.

 $<sup>^2</sup>$  Length 234 m.; area of basin 5365 sq. m. (Strelbitsky); 5587 sq. m. (Bludau).



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Piedmont, or *Piemonte*—"the foot of the mountain"—or district at the base of the Alps; and thirdly, the peninsula proper, the hills of which are connected with those of the first-named region by means of the Maritime Alps.

In the south-eastern part of the peninsula, from the Gulf of Taranto to the neighbourhood of the Strait of Messina, the mountain land consists chiefly of crystalline metamorphic rocks, which cross the Strait and pass into the north-east angle of Sicily. Sicily itself consists mainly of Tertiary strata, through which appear, in a few localities, older rocks of Permo-carboniferous, Triassic, and Jurassic age.

The centre of the peninsula is composed largely of Cretaceous rocks, overlaid for great areas by Tertiary beds (Eocene and Miocene). A continuous band of these, fringed by an outer line of Pliocene deposits, ranges down the east coast, passing inland near Foggia, and reaching the sea again at the Gulf of Taranto. Eocene beds form a great part of the north of Italy between Florence and the plain of the Po. Farther to the south, through Tuscany and towards Rome, patches of Miocene or middle Tertiary strata diversify the country. In the central highlands of Italy the rocks have been bent into a series of folds, with a general N.W. and S.E. direction. These folds bring up the Jurassic rocks (Lias and Oolites) in many places from beneath the Cretaceous beds. Both formations consist very largely of limestone.

The older strata of the peninsula are confined to its western side, and occur there only in isolated areas. Of these the most important is that near Carrara, where the central part of the Apuan Alps is formed of Carboniferous rocks.

VOL. I

It is also on the western side that the *volcanic* rocks are found. This is true equally of the more modern products, so well known in the Roman states and around Naples, and of the older igneous rocks, of which small areas occur in the south-west, in Tuscany and near Genoa.

The newer Tertiary beds of Italy, and especially of Sicily, are of great interest from the large number of fossils which they have yielded. The Arno valley contains certain lacustrine strata of late Pliocene, or more probably of post-Pliocene age, which contain the relics of various mammalia. The area in which they occur in the upper Val d'Arno is about 12 miles in length by 2 in breadth, and the depression which the strata fill consists of Cretaceous and Eocene or lower Tertiary formations. The thickness of the overlying Pliocene beds is about 750 feet, the uppermost strata being of newer Pliocene age, 200 feet thick, while the remainder is formed of older Pliocene. The upper series consists of sands and conglomerate, containing the bones of Mastodon arvernensis, Elephas meridionalis, Rhinoceros etruscus. Hippopotamus major, besides species of deer, bear, hyana, and Felis, and remains of coniferous trees.

Remains of teeth of the mammoth (*Elephas primigenius*) are found in many parts of Tuscany, mostly, it seems, in the so-called *panechina*, a loose description of loam.

## 15. Minerals

Apart from ordinary building stones and earths the principal mineral products of Italy arranged roughly in the order of their annual value are sulphur, statuary marble, zinc, lead, copper, iron, lignite, and other fossil fuel, boracic acid, silver, mercury, and salt. Sulphur is

mainly produced in Sicily, near Caltanissetta, Girgenti, and Catania, but also in several provinces of the mainland. The statuary marble of Italy has been already mentioned.1 Zinc and lead are both derived mainly from the south-west of the island of Sardinia, round Iglesias. Copper ore is mined chiefly in southern Tuscany in the province of Grosseto, where this mineral furnished at a very remote date part of the material for the bronzes carried by the ancient Etruscans to widely distant parts of Europe, but it is also produced in the provinces of Genoa and Belluno. Elba has been celebrated for its iron ores at least since Roman times, and the excellent quality of the ore, well adapted as it is for the making of Bessemer steel, makes it a valuable article of export at the present day to the United States and the United Kingdom. Excellent ores of the same metal have also long been worked in several Alpine valleys of Lombardy—Val Trompia, Val Camonica, Val Seriana. In the volcanic district in the south of Tuscany round the heights of Le Cornate in the communes of Castelnuovo, Val Cecina and Pomerance in the province of Pisa, and in those of Massa Marittima and Montieri in Grosseto, the boracic acid vapours which escape from the ground are condensed in water and then solidified.2 chief workable deposits of lignite are in the provinces of Arezzo and Perugia (near Spoleto). Silver is produced in Sardinia (province Cagliari), and mercury at Idria near the new north-east frontier. Eleven-twelfths of the salt production of Italy is sea-salt, but rock-salt is worked in

P. 63.

<sup>&</sup>lt;sup>2</sup> The area of the district within which these vapours escape is 700 square miles. The temperature of the vapours varies from 100° to 175° C. (212° to about 380° F.), and their heat is utilised to evaporate the waters of the pends in which they are condensed. See C. De Stefani, *I soffioni boraciferi della Toscana*, in *Mem. Soc. Geog. Ital.* 1896, pp. 410-435.

the Sicilian provinces of Girgenti and Caltanissetta, as well as in the mainland province of Cosenza, and salt is obtained from brine-springs in the provinces of Pisa and Parma.<sup>1</sup>

#### 16. Climate—Flora -- Malaria

Italy shares in the uniformity of summer temperature characteristic of the Mediterranean region generally. The mean summer temperature does not exceed 80° F. at any station in the whole kingdom, and, except in the elevated valleys of Piedmont, it is nowhere lower than 70°. The greatest extremes of temperature are in the Po basin; but even here, except in Piedmont, the mean winter temperature does not descend below 35° F. In this region the advantage of the shelter afforded by the northern mountain barrier is strikingly illustrated by the climatic differences between Milan and the Lake of Como, a few miles to the north. At the former station the winter temperature sinks to about the point just mentioned, but at Villa Carlotta on the Lake of Como the corresponding temperature is four degrees higher. Hence the rich Italian vegetation which strikes every one in descending from the north on the lakes of Lombardy, a vegetation which is not seen with the same luxuriance even in the plains a little way to the south. Regarding the rainfall of Italy nothing need be added to the account given in the Introduction of the general characteristics of the rainfall of the Mediterranean region. and there also we refer the reader for information relating to the occurrence of the sirocco and the mistral in the peninsula (see pp. 41-4).

<sup>&</sup>lt;sup>1</sup> For further information the reader may consult the exhaustive work of Mr. Jervis, *I tesori sotteranei dell' Italia*, Turin, 1873-81.

As to the vegetation of Italy, it must be borne in mind that its general aspect depends largely on the superficial configuration. The great extent of the mountains and highlands causes the truly Mediterranean vegetation, the myrtles, olives, and other evergreens, to be confined chiefly to the coast, especially in upper Italy.

The salubrity of the climate of Italy is greatly affected by the extent of the tracts in which intermittent malarial fevers are prevalent during the summer. About twenty years ago this was made the subject of a Government inquiry, and since then an instructive map,1 with text, throwing a great deal of light upon the matter, has been published. From this it appears that out of the sixty-nine provinces into which the kingdom of Italy is divided, only six were altogether free from malaria; these six being Genoa, Porto Maurizio, Florence, Massa e Carrara, Pesaro, and Piacenza. Of the remaining sixty-three provinces thirteen suffered only from a mild form of the fever, twenty-nine from a more severe form, and as many as twenty-one from the worst kind of malaria, which occasionally gives rise to fevers that prove fatal in twenty-four hours. In northern Italy this most pernicious form of the malaria occurred only in two districts—round the lagoons of Venice and in the neighbourhood of Brescia; in middle Italy it is the Tuscan Maremma (the provinces of Pisa and Grosseto), the Chiana depression in the province of Perugia, and the Campagna of Rome, that were affected by it; and in southern Italy, Apulia, the strip called the Tavogliere on the Gulf of Manfredonia, the environs of Pæstum,

<sup>&</sup>lt;sup>1</sup> Carta della malaria dell' Italia, illustrata da Luigi Torelli, Senatore del Regno, Florence, 1880. The map inserted in earlier editions was based on that in Petermanns Mitteil. 1895, Pl. 3, reduced from an official map founded on the statistics of mortality due to malaria in 1890-92.

almost the entire coast of Calabria and Basilicata, and the south of Sicily. How seriously prejudicial to the health of the inhabitants these malarial tracts were, will be apparent from the fact that in Sicily alone two-thirds of the railway officials were stated to be attacked by the fever every year. The cause of the insalubrity is found by the commission to consist in the marshy nature of the ground. Since ancient times the extent of marsh has in many places been increased through the excessive clearing of mountain forests, causing the rain water to rush unchecked down the mountain sides, and the rivers to swell into devastating floods. The remedies applied under the Amelioration Acts of 1882, 1886, and 1893 were all directed towards the drying of the soil. Three methods are employed—drainage canals (most extensively), pumping machines, and what may be called the sedimentation system (bonificazione per colmata). This last system, invented by the physicist Torricelli, consists in leading a river into the land to be improved, and causing it to drop there all its solid constituents, and so gradually raise the surface and ultimately consolidate the ground, the surplus water being finally led off by drainage canals. Much benefit is also ascribed to the planting of the Australian tree, the Eucalyptus globulus, which has already been introduced with so much beneficial effect into many unhealthy regions in different parts of the world, and among other places into the Campagna of Rome. In upper Italy, where the *E. globulus* does not thrive, the introduction of other two species of Eucalyptus, E. amygdalina and E. resinifera, is recommended for the same purpose. The scourge has abated since the discovery of the connexion between malaria and mosquitoes, just as that of pellagra has diminished since its transmission by sandflies has been understood.

## 17. People—Political Divisions—Emigration

The whole Italian peninsula, with the large islands of Sicily and Sardinia, now forms a single kingdom.

The Roman Catholic is the State religion, but perfect freedom of worship is now recognised. Amongst the few Protestants are comprised the 20,000 Waldenses in



WOMEN OF NAPLES.

the district of Pinerolo in the Cottian Alps. Linguistically also, notwithstanding a very large number of distinct dialects, the nation has acquired a certain unity on the basis of a common literary language everywhere understood.

For the convenience of administration Italy is now divided into provinces, all named after their chief towns. These form sixteen departments, which, though no longer of any political consequence, can never be effaced as

geographical expressions. These are Piedmont, Liguria, Lombardy, Venetia, Emilia, Umbria, The Marches, Tuscany with Massa, Latium, the Abruzzi with Molise, Campania, Apulia, the Basilicata, the two Calabrias, Sicily, and Sardinia.

Italian emigration has long been a pronounced feature of the movement of population in Europe. The number of Italians resident abroad was officially estimated at under half a million in 1871, above one million in 1881, and nearly two millions in 1891. The returns give the figures under two heads—emigration proper, and temporary emigration. Under the first head, in recent years, about 140,000 left Italy annually to settle permanently, chiefly in the United States, and in Brazil, Argentina, and other parts of South America, the males in this case being twice as numerous as the females. Under the second head the annual average in recent years has been about 120,000, the males in this case being eight or nine times as numerous as the females, and finding temporary employment mostly as labourers in railway construction and other engineering works in neighbouring countries.

Between 1900 and 1914 the emigrant stream continued. Most of the emigrants leave the sparsely populated hill country. Permanent emigrants, who numbered 4000 in 1918, leave the district north of Genoa and south of a line north-east across the peninsula from Rome. Transitory migrants are most numerous from provinces along the land frontiers.

# 18. Social Culture—Public Instruction—Crime—Secret Societies

Of the high state of its intellectual culture ample proof is supplied by the current Italian literature, and

by the numerous creations of art forming the pride of its cities, museums, and private galleries. Italy is the storehouse of art in every sense of the term,—architecture, painting, sculpture,—and is especially rich in the grand monuments of ancient, mediæval, and modern times. The higher instruction is provided by twenty universities and about seventy lyceums; but the statistical returns still show the state of education among the lower classes in an unfavourable light, although a steady improvement in this respect is going on.

In intimate connection with the ignorance of the lower orders is their moral status. The passionate temperament of the Italians doubtless, to some extent. excuses the frequency of murder and personal assaults; but justice was also much impeded by the more or less secret associations of the lawless classes—the Camorra of the former Neapolitan provinces and the Mafia of Sicily.

"La Mafia is a phase of Sicilian society; it is not a compact organisation of individuals bound together by oaths, a secret society of members who recognise one another by grips and passwords. It is a state of social immorality tacitly acquiesced in by an indefinite number of Sicilians, who order their living, regulate their thinking, according to a code of ethics called 'Omertà.'

"According to Bonfadini, La Mafia is a development and perfecting of individual influence, enhancing every possibility for evil-doing. It is the expression of the brutal instinct of self-preservation on the part of all individuals who wish to live, not by labour, but by violence, crime, and intimidation.

"La Mafia . . . may be said to be a conspiracy of the strong and masterful against the weak and fearful.

"Only a small minority of Sicilians are veritable Mafissi, but this masterful, active minority, inspired by the spirit of evil, 'having Omertà in their hearts,' terrorise the unorganised, timorous, passive majority, the peaceable citizens who go in fear they know not of what evils, and, knowing the impotence of law to protect them, are disposed to shield the criminal rather than to deliver him up to justice, choosing to perjure themselves in order to acquit a Mafisso who has injured them, rather than, by testifying against him, to run the risk of falling victim to his vengeance."

Over against this former lawlessness may be placed the Fascist movement, which (1923) promises to regenerate the Italy of to-day.

#### 19. Agriculture and Manufactures

Speaking generally, not only public security, but also the intellectual culture of the people, tillage, industry, trade, highways, canals,—in a word, all that goes to constitute civilisation,—is on a considerably lower level in southern Italy and the islands than in the central and northern provinces, which latter are in many respects no way behind the most advanced European states.

Italy is pre-eminently an agricultural country, and owing to the great variety of its climate and surface, yields a great diversity of products—a diversity which would be greater if districts in southern Italy had not been ruined by malaria. The main products of southern Italy accordingly are those which can stand summer drought—wheat, wool, and southern fruits, principally oranges,<sup>2</sup>

Picturesque Sicily, by W. A. Paton. London and New York, 1898.
<sup>2</sup> See Introd. p. 48.

almonds, and figs, besides the olive and the vine. In respect of quantity Italy ranks second among the wineproducing countries of the world, but as regards quality it no longer holds the place which it held in ancient imperial times, when Italy supplied two-thirds of the eighty sorts of wine referred to by Pliny as competing in the great markets of the Roman world, and no vintages could vie with the products of the Massican, Surrentine, Albanian, and Cæcuban vineyards.<sup>1</sup> Even at the present day, however, the best wines of Marsala in Sicily, of Chianti in upper Tuscany (the Val di Chiana), and of Asti in Piedmont have a high reputation. A peculiarity of Italian viticulture which has come down to the present day from ancient times, is that of allowing the vine to twine and climb round elm-trees planted in rows between which other crops are grown. This mode of cultivation demands a strong rich soil, and is practised chiefly in the Po basin, Campania, and Sicily. It bears witness to the weight of taxation on the peasant, who is driven to use every square foot of soil. Olive-oil like wine is mainly a product of southern Italy, but in this case also some of the best qualities, above all the celebrated oil of Lucca, are from the north. In the northern plains maize is largely grown, and on the irrigated fields of the same region, rice, which was first introduced by the Arabs into Sicily, but has now been almost entirely banished from southern Italy by malaria, is a product of great economic importance. All parts of the Po basin have extensive fields of it, but it covers the largest area in the adjoining parts of Lombardy and Piedmont between the Olona and the Dora Baltea. Northern Italy is also the region of the silkworm, which yields by far the most important of the export products of Italy, of hemp and

<sup>&</sup>lt;sup>1</sup> All in Latium or Campania.

flax, of the irrigated meadows whose crop is mown from four to nine times a year, of cattle-rearing and cheesemaking (the celebrated Parmesan, Gorgonzola, and Stracchino cheeses all made in the plains of Lombardy), the source of supply of the enormous quantities of eggs which Italy is now sending in increasing quantities even to England. Among the minor products of the south, above all Sicily, are sumach and carobs, both introduced by the Arabs, to whom Italy was also indebted for the introduction of cotton and sugar-cane, the cultivation of which is now nearly extinct, though the former gained a temporary importance during the American civil war.

For the carrying on of manufacturing industries on a great scale under modern conditions Italy is at an obvious disadvantage through its lack of fuel, though this want is to some extent made up for by the utilisation of waterpower. The silk industry in its various branches is the most important of those connected with textiles, the quality is the finest in the world, and the quantity is only exceeded by two other producers; Como and Bergamo are the chief centres. The cotton industry is pursued chiefly in Lombardy, Piedmont, and Liguria, the woollen industry in Piedmont and Venetia, especially in the provinces of Novara (where Biella at the base of the Alps has been a seat of that manufacture for about a thousand years) and Vicenza (where Schio occupies a similar position, enabling it like Biella to make large use of water-power). At Terni the enormous waterpower of the Cascate delle Marmore is utilised for the largest iron and steel works of central Italy. Engineering and shipbuilding works have been established at Naples, Turin, Portoferraio, Pozzuoli, Sampierdarena (Genoa), and

<sup>&</sup>lt;sup>1</sup> This name is one of those blunders which spring up without apparent reason and yet seem doomed to perpetuity.

elsewhere. Among other industries that of the manufacture of fancy furniture in imitation of the antique may be mentioned as rapidly growing and thoroughly characteristic, and the manufacture of bent-wood in imitation of the Austrian has been introduced at several places in the north-east. Very considerable developments in the use of water-power during recent years have practically eliminated other sources of power from the cotton factories. Roughly three-quarters of a million workers are engaged in each of the three main forms of industry—textiles, metallic, and food-products.

## 20. Regions and Towns of the Mainland: (A) Calabria

The spread of a higher civilisation in Italy may be said to correspond in a general way with the spread of the Italian name over the peninsula. Till after 500 B.C., the name Italia, originally Vitalia, on Oscan coins Vitelio, was restricted to the small peninsula in the extreme south, limited on the north by the isthmus between the gulfs of St. Eufemia and Squillace. By the middle of the fifth century B.C. the name had become extended to the whole of the Bruttian peninsula, corresponding roughly to the modern compartimento of Calabrie, the small river Laos, now Lao, being regarded as the northern limit on the west, as it continued to be even after the name had come to embrace also the east side of the Gulf of Taranto, the ancient Calabria, as it did according to the usage of the Greeks before the close of the same century. From the Greeks the Romans learnt to distinguish the mainland from the island of Sicily as

<sup>&</sup>lt;sup>1</sup> Interpreted even in ancient times as "cattle-land," the name being regarded as cognate with Latin vitulus, Umbrian vitulu, a calf. This interpretation is accepted by various modern scholars (Curtius, Niebuhr, Mommsen, Nissen), but rejected by others. See Nissen, Italische Landeskunde, i. p. 62; and Egli, Nomina Geographica.

Italia, but northwards they did not restrict the application of the name as the Greeks had done, but extended it to the whole peninsula, excluding the Po basin. It was in this sense that the name was undoubtedly used in the treaty of 241 B.C. concluding the first Punic war when the Carthaginians were forbidden to seek recruits in Italy. In this sense at first the Esino (Æsis), afterwards the Rubicon, was recognised as the northern boundary of Italy east of the Alps. When Roman colonies were founded in the Po basin after the conquest of Gallia Cisalpina (222 B.C.), these settlers called themselves Italici, as distinguished from the surrounding inhabitants, but the name Italia is first met with as applied to the whole country south of the Alps in Polybius (about the middle of the second century B.C.).

As the name thus advanced from south to north, so also on the whole did the higher civilisation which the Greeks introduced from the east. The Greek colonies which secured in early times for southern Italy the name of Magna Gracia or Great Greece, were most thickly studded round the coasts of the modern Calabrie, where some of them attained a degree of wealth and prosperity which presents a strange and striking contrast to the spectacle offered by their successors nowadays. Some of them still survive in name. Others have entirely disappeared; but the glory of all had departed even in ancient times. To a large extent the wealth of these ancient colonies was due to the wide difference between their civilisation and that of the people among whom they settled, and among whom they introduced superior modes of agriculture and industry. If with Nissen we may credit those colonies with having introduced the

<sup>&</sup>lt;sup>1</sup> Nissen, *ubi supra*, p. 67.
<sup>2</sup> See below, p. 149.

cultivation of wheat into Italy, the commerce arising from that alone, with the people of the interior as well as distant lands, must have been a source of wealth of the highest consequence. But the peculiar advantage of the colonies disappeared as the natives learnt their arts. In the language of Nissen,1 the successful reaction of the interior against the coast began at the end of the fifth tentury B.C. Even before this, however, mutual strife had weakened the cities, and in one case had led to total and final destruction. Further injury has been wrought in subsequent centuries by the vicissitudes of war, and still more lasting injury by the spread of malaria, which prevents, so long as it continues, all possibility of recovery. In this peninsula, which had in ancient times so many famous cities, there are now only two towns, Reggio and Catanzaro, with more than 20,000 inhabitants. Croton or Crotona, the city of Pythagoras, which, in the sixth century B.C., had a circuit of 12 miles, still survives as Cotrone, but has a population under 10,000. The town itself, in ancient times renowned for its pure air, is said still to enjoy a tolerable atmosphere, but all the district round is highly malarious. It consists entirely of a plain, with gently undulating hills, without trees, and without springs, covered only with a poor pasture, and entirely deserted from June to November. The principal valley of this peninsula, that of the Crati (Crathis), with its tributary the Coscile (Sybaris) to the west and north of La Sila,2 is equally desolate, though in ancient times it was the seat of a city, Sybaris, which has become a byword in many languages for effeminate luxury. Founded like Croton by Achæans in the latter part of the eighth century B.C., it became mistress of four nations

<sup>&</sup>lt;sup>1</sup> Ubi supra, p. 65.

<sup>&</sup>lt;sup>2</sup> See above, p. 79.

and twenty-five cities. Its valley is said to have yielded wheat to the amount of one hundredfold. But this city was destroyed in 510 by the Crotonians, who overwhelmed it with the waters of the Crati, which they turned against it, and since then it has been obliterated. Nearly sixty years later a new Greek colony was founded by the name of Thurii on a neighbouring site. Among its earliest citizens was the historian Herodotus. In Roman times this city was a flourishing colony, and it continued to exist at least till the sixth century, when it is mentioned by Procopius; but ultimately its inhabitants removed to a hill, now about 12 miles inland, on the left bank of the Crati, and founded the small town or village, with less than 3000 inhabitants, bearing the name of Terranova di Sibari. The valley-bottom of the Crati, a plain more than 80 square miles in extent, is now, or at least at the time of the journey of Vom Rath, was without a parallel in Italy in respect of barrenness and desolation. From Cosenza, near the head of this valley, down to Tarsia, a distance of 23 miles, not a single farm was to be seen, and though amelioration works are now being carried on near Terranova di Sibari, they affect an area of only about 3500 acres. These examples may serve to throw light on the fate of a large part of southern Italy, and to show how slow and arduous must be the process of restoration.

Of the other Greek colonies of this peninsula Scylacium still survives as the small town of Squillace, and though this place is now overshadowed by Catanzaro, its long-continued importance is shown in the fact that it has given name to the adjoining bay. The name of Caulonia still exists, but the town so called to the south of Squillace is inland, at a little distance from the ancient

<sup>&</sup>lt;sup>1</sup> Ein Ausflüg nach Calabrien (Bonn, 1871), pp. 139-41.

Caulonia which stood on the coast. On the west side of the peninsula the name of the ancient Medma or Medama survives in that of the small river Mesima, but the town at its mouth has wholly disappeared. Farther north, Hipponium was, under the Roman form of Vibo, one of the most flourishing cities in southern Italy, even in the time of Augustus. It subsequently fell into ruins, but its name still survives in that of the village of Bivona. In Norman times, however, the town of Monteleone, founded on its ruins, again became a place of importance, and was made by Roger Guiscard the seat of a magnificent castle, which survived till the earthquake of 1783. But the most important town on this side now, as it was one of the most important in ancient times, is Reggio di Calabria 1 (Rhegium), founded about the middle of the eighth century B.C. by Chalcidians and Messenians. It was one of the towns of Italy that remained subject to the Byzantine emperors long after the downfall of the western Roman empire, and Greek continued to be spoken here till a very late date.

#### 21. Towns: (B) Basilicata

This province, so-called after the Byzantine emperor Basilius II., who reconquered the territory from the Saracens and Lombards in the eleventh century, corresponds roughly with the ancient Lucania, which, however, did not extend so far north in the interior, while, on the other hand, it embraced the southern part of the modern Campania on the west coast. Since ancient times its coast-line, forming the north-western shore of the Gulf of Taranto, has been advanced seawards by the deposits

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 $<sup>^{1}</sup>$  (Reggio di Calabria), pop. (1861), 15,700 ; (1881), 24,300 ; (1911), 34,146 ; (1921), 60,000.

of the torrents descending from the lofty mountains that form the bulk of the territory, and the maritime tract is now so marshy and malarious as to be entirely destitute of towns. The sites of the ancient Greek cities of Heraclea and Metapontum are now inland, and only the name of the latter now survives as Metaponto, the junction of the lines from Reggio and Brindisi. Potenza (Potentia), in the upper part of the valley of the Basento (Casuentus), is still the chief town in the interior, as it was in ancient times. Another ancient town, Grumentum, in the upper valley of the Agri (Aciris), which is spoken of as navigable even in the middle ages, and which in ancient times was followed by a road connecting Heraclea with Campania by the Val di Diano, has now entirely disappeared. In the north of the Basilicata the ancient Venusia, situated amidst romantic scenery to the south of the Ofanto (Aufidus), the place of refuge of the Roman army after the defeat of Cannæ, and the birthplace of Horace, survives as Venosa. A few miles to the west, on the northern slopes of the extinct volcano of Vulture (4630 feet), stands Melfi, which is said to have been founded in A.D. 304 by some shipwrecked Romans who had set sail for the new capital of Constantine the Great, and afterwards became prominent in history as the capital (from 1041) of the Norman kingdom of Apulia. It suffered terribly from earthquakes in 1451, 1694, and 1851, on the last of which occasions its fine Roman cathedral was destroyed.

#### 22. Towns: (C) Campania

The modern Campania justifies its name of "The Plain" less than the ancient province of the same name,

inasmuch as it embraces more of the mountains, stretching farther north, east, and south. It begins in the south with a mountainous region advancing close up to the coast and jutting out between the gulfs of Policastro and Salerno. This part of the coast is now destitute of any but insignificant towns, although in ancient times it could boast of two celebrated Greek colonies,—Buxentum, now Policastro, at the mouth of the Busento (Pyxus), and Elea or Velia, at the mouth of the Alento (Hales), celebrated as having given name to one of the oldest schools of Greek philosophy. The maritime tract which is traversed by the Sele (Silarus), and stretches northwards as far as the next mountainous promontory (south of the bay of Naples), is a malarious plain, and we now come to no towns till we reach Salerno at the south-east angle of that promontory. In ancient times, however, there stood here the celebrated city of Posidonia, originally, it is said, a colony of Sybaris, afterwards a Roman town bearing the name of Pæstum. But even in ancient times, while still renowned for its rose-gardens, Pæstum was an unhealthy town, and it has been entirely deserted since its destruction by the Saracens in 915.

Two towns, Salerno and Amalfi, on the south side of the rocky promontory just referred to, formerly had much greater prosperity and celebrity than they now enjoy. Salerno 1 (Salernum), at the south-eastern angle of this promontory, was made a Roman colony in 194 B.C., but it first rose into importance under the Lombards, into whose hands it fell with most of Italy in the latter half of the sixth century, and its importance was enhanced when it was taken, in 1075 or 1076, by the Normans, under Robert Guiseard, who made it his capital. Its school of medicine, dating from the tenth century, re-

<sup>&</sup>lt;sup>1</sup> (Salerno), pop. (1861), 21,000; (1881), 23,000; (1921), 52,000.

mained for hundreds of years one of the most celebrated seats of learning of the time. Amalfi is not mentioned before the fall of the western Roman empire, and, according to its own chronicles, is said to have been founded by a colony from Melfi which sought refuge here on



SALERNO.

account of the hostile incursions to which the latter city was exposed. Afterwards it became, till late in the eleventh century, when it is said to have had not less than 60,000 inhabitants, the chief seat of commerce in southern Italy. During this period of great trading importance it was responsible for a code of maritime law for the Mediterraneau merchants. It is one of those places which, after Italy had been overrun by the Lombards, still remained subject at least in name to the eastern Roman empire.

and this position gave it great advantages in many of the chief markets of the Levant. Behind it lay the rich and populous plain round Naples, which, no doubt, formed a great market in its immediate neighbourhood; and though Naples and Gaeta, situated on this plain, continued for a time in the same relationship to the



AMALFI.

Byzantine Government, one may conjecture that in those troubled times merchants felt more secure on a site so well defended by nature on the side of the land as Amalfi.<sup>2</sup> It was ultimately rendered tributary by the same scafaring people and at the same time as Salerno, and in 1133 it was sacked by the Pisans and never recovered.

<sup>&</sup>lt;sup>1</sup> See above, pp. 73-4.

<sup>&</sup>lt;sup>2</sup> Till the beginning of the nineteenth century people were carried across the hills to the north in litters (Amati).

The oldest seaport of the Campanian plain known to history is Kyme, better known under its Latinised form of Cumæ, situated to the west of the Phlegraan Fields on the seaboard running north from the Bay of Naples, where some trachyte cliffs, relics of an extinct volcano, offered a site for a citadel. It was the northernmost of the Greek colonies in Italy. By some its foundation is referred to as remote a period as 1050 B.C., and even if this must be rejected as an exaggeration, its great antiquity, which is undoubted, is one of the most noteworthy indications of the attractions of the area of rare fertility whose commercial needs it subserved. It declined after its capture by the Campanians in 417 B.C., but long before this it had founded, on the site of an older city known as Parthenope, the dependency of Naples, a populous city in ancient times and during the middle ages, and now, as it has long been, the most populous city in Italy.

Naples, in Italian Napoli (Neapolis, "new city"), stands on the northernmost recess of the bay of that name, facing Vesuvius, at the east end of the Phlegræan Fields, the last of the hills of which is the site of the castle of St. Elmo, founded in 1343. It rises in the shape of an amphitheatre along a lovely, almost landlocked, bay, extending for 75 miles between the promontory of Miseno and the Capo della Campanella. In the foreground stand the picturesque outlines of Vesuvius, the Monte Sant' Angelo, and the islands of Procida, Ischia, and Capri, between which lies the outlet to the Tuscan Sea. In the distance appear the crests of the Apennines on the north and north-east, and close to the city Posilippo, with the grave of Vergil; on the west and north of it one of the most delightful prospects imaginable, embracing a view

 $<sup>^{1}</sup>$  (Naples), pop. (1861), 419,000 ; (1891), 518,000 ; (1921), 780,000.

of the Camaldoli heights. Seen from the sea or from Vesuvius, the semicircular shores of the bay, from the classic Baiæ to Sorrento, seem to form one vast coronet, with the city itself like a brilliant gem flashing in the centre. To the charms of its romantic situation amongst the hills is added the almost tropical splendour of a luxuriant vegetation, for here bloom the cactus and the agave amidst groves of stone pine, orange, lemon, and palm trees. Mirrored in the glittering waters of the bay are its eastern neighbours—Portici, Torre del Greco, Torre dell' Annunziata, in immediate proximity to all that remains of the classic Pompeii.

In 1137 Naples became incorporated with the dominions of the Normans in southern Italy, and after then it formed part and generally was the seat of government of a kingdom under foreign (German, French, Spanish, Austrian, Spanish Bourbon) dynasties embracing all southern Italy, and for the most part also Sicily, till 1861, when the whole territory belonging to it was annexed to the kingdom of Italy. Since then the condition of the city and its people has been greatly improved. The swarms of lazzaroni for which it was notorious for generations no longer exist, and here as elsewhere in Italy the education of the people is rapidly advancing. Naples is the seat of a university founded in 1224, and possesses also a National Library, the Brancacciana Library, and the Bourbon Museum (Museo Borbonico), containing a large collection of Roman, Etruscan, and other early Italian as well as Greek antiquities. Of its monuments of antiquity the most celebrated are the catacombs and the remains of the Julian aqueduct known as the Ponti Rossi. The port of Naples ranks next after that of Genoa among those of Italy. It is divided into three parts by rocks and piers.

At the head of the recess to the west of Naples stands *Pozzuoli* (Puteoli), with numerous remains of antiquity, the most celebrated of which are three columns of the temple of Serapis already mentioned. It is now the seat of a government factory of arms, armour-plates, and naval machinery. The natural harbour protected by the small rocky peninsula forming Cape Miseno at the extreme north-west of the Bay of Naples, after being artificially improved by Augustus, formed the principal station of the Roman fleet on the Tyrrhenian Sea.

On the rocky peninsula itself stood the villa of Marius and Lucullus, which, when the Vandals became formidable, "assumed the strength and appellation of a strong castle, the obscure retreat of the last emperor of the West," and which in the beginning of the tenth century the people of Naples, instead of defending it against the Saracens, demolished to prevent it from falling into their hands.<sup>1</sup>

On the coast, north of the Bay of Naples, the ancient Caieta, which possessed an excellent harbour, is now the fortified town of Gaeta. In the interior of the Campanian plain, Capua, on the Volturno, has at all times been the most important city, but the remains of the ancient Capua, with ruins of an amphitheatre, lie south of the river, two miles distant from the modern town. This latter is defended by fortifications originally erected by Vauban, and extended in 1855. Among the mountains of the present Campania, Benevento,<sup>2</sup> a town whose importance, determined by its situation at the confluence of the Calore and Sabato, and at a point commanding the approach to various other valleys belonging to the basin of the Volturno, dates from very early times. Originally a city of the Samnites

<sup>&</sup>lt;sup>1</sup> Decline and Fall, ch. xxxvi.
<sup>2</sup> (Benevento), pop. (1861), 16,500; (1881), 18,200; (1921), 27,000.

under the name of Maleventum, it was made a Roman colony under that of Beneventum in 268 B.C., and became one of the chief cities on the Appian Way. Under the Lombards it became, in 589 A.D., the capital of a duchy which, after various turns of fortune, was annexed in 1053 to the papal domain.

### 23. Towns: (D) Apulia

This territory, in Italian Puglia, which comprises the ancient Calabria (the south-eastern peninsula of Italy) as well as Apulia, has no considerable towns. The ancient Greek colonies in it were few and were confined to the peninsular portion. The Dorian seaports of Hydros, the Hydruntum of the Romans, Callipolis, and Taras, or in its Latinised form Tarentum, survive in Otranto, Gallipoli, and Taranto, occupying three of the best situations on the coast of that peninsula, and of these Taranto is now the most important, as its predecessor was in ancient times. It was for a time the most flourishing and powerful city of Magna Græcia, but at the census of 1881 had a communal population of less than 36,000. Anciently it was celebrated for its salubrity, but now malaria affects the district, though it is not so severe a scourge as on the neighbouring coast of the Basilicata. Its great advantage consists in its harbour, which consists of an outer or mercantile portion, known as the Mare Grande, in which there is a depth of 18 feet, but from which there leads a channel more than 33 feet in depth to the Mare Piccolo, which is capable of receiving the largest ironclads, and is now used as a naval basin and has adjoining it a government arsenal and dockyard. The port has been strongly fortified. Since these changes the population must have considerably increased, as the aspect of the fort has been greatly modified. In comparison

with the other three naval ports, Venice, Naples, and Spezia, Taranto occupies the most valuable strategic position in relation to the modern Italian aim of making the Adriatic Sea an Italian lake. During the Great War the safe harbour was of considerable use to the Allies.

North of Hydruntum there do not appear to have been any Greek colonies such as those of Magna Græcia, though the earliest inhabitants of this region known to history, the Iapygians, were probably settlers of the Hellenic stock who came over from the opposite shores of the Adriatic in some prehistoric period, and by the second half of the fourth century B.C. the whole population was completely Hellenised. They were probably in a more advanced state of civilisation than the previous inhabitants of Italy with whom the Greek colonists came in contact elsewhere, and better able to resist encroachment. Moreover, the whole coast-line north of Brindisi is of an uninviting uniformity, presenting no attractive sites for the establishment of mercantile cities. Brindisi (Brundusium or Brundisium) has the one good harbour, and is a very old town, though it never seems to have been Greek. It was colonised by the Romans in 245 B.C., and in after times was celebrated as the regular crossing-place to Greece (Dyrrhachium), as it now is as one place of embarkation of mails and overland passengers for the East.

Apart from these towns both the coast-line and the interior are so uniform in character as to give no marked advantage to any sites, but the coast is studded with many small seaports with a communal population exceeding 10,000, and generally 20,000, while another series of towns of the same rank lie in the interior about the base of Le Murgie or more elevated and rugged tablelands in the back of the province. These inland

towns, now as in ancient times, are only trading centres for the agricultural population of the tavogliere, renowned for their wheat and their wool. Both seaports and inland towns are in some cases the direct successors of old Roman cities, in others not, and while some have declined in importance others have risen, and in some cases the modern towns lie not on the sites of the ancient, but on a neighbouring part of the coast or the plain. Among these seaport towns may be mentioned Manfredonia, built in 1261 by King Manfred, son of the Emperor Frederick II., close to the site of the ancient Sipontum, Barletta (Barduli), Trani (Turenum), Bari 2 (Barium), Bisceglie, Molfetta, Monopoli (Egnatia, situated at the point where the Appian Way touched the coast). Among the inland towns are Lucera (Luceria), Foggia 3 (near the ancient Argyrippa or Argyra, afterwards Arpi), the most populous of all, Canosa (Canusium), Ascoli Satriano (Ausculum), Cerignola (Ceraunilia), Andria, Corato, Terlizzi, Bitonto (Butuntum), Lecce (Lupiæ). Two of these places, Arpi and Canusium, appear to have attained a high degree of prosperity in prehistoric times. Strabo refers to the extent of their encircling walls as witnessing their former greatness, and evidence of this has come down even to our own times in the rich ornaments of their graves.

## 24. Towns: (E) Latium and Umbria

It was in the portion of Italy embraced by these territories in their modern extent that the most expansive native civilisations of ancient times arose. The region embraced by them has marked advantages. Here

<sup>&</sup>lt;sup>1</sup> A name believed to refer to the chessboard-like arrangement of its fields.

<sup>&</sup>lt;sup>2</sup> (Bari), pop. (1861), 33,200; (1881), 59,700; (1921), 131,000.

<sup>8 (</sup>Foggia), pop. (1861), 32,500; (1881), 40,300; (1921), 90,000.

the main chain of the Apennines in its arching sweep retires farthest from the west coast, leaving on that side most ground at a sufficiently low altitude to be highly productive. It is behind this region that the Apennines attain their highest altitude, thus promoting the deposition of copious rains from westerly winds. From both these causes it is this region that contains the only two important navigable rivers of the Italian peninsula, the Tiber and the Arno, and it was on the banks of the greater of these two that there arose the most steadily progressive empire of ancient times.

Rome 1 was not the oldest city of Italy that showed the power of developing a native civilisation, but it was that which, in the long run, proved the most vigorous and powerful. It would be absurd to ascribe the rise of the city and its dominion solely to geographical causes, but it is equally certain that without some great geographical advantages its rise would not have been possible. Among these advantages probably the most decisive was that of its river, which was anciently much more easily navigable than it is now, since its bed has been filled with the accumulations of centuries. In the time of the republic vessels with three and even five banks of oars, which must have had a draught of 8 to 12 feet, reached the wharves of the Campus Martius, and in the reign of Constantius, after the middle of the fourth century A.D., the great obelisk of Heliopolis, measuring at least 115 feet in length, and having a weight of about 450 tons, now in the square in front of the Church of St. John Lateran, was landed 3 miles below the city from a ship propelled by three hundred rowers. Now the river is

<sup>&</sup>lt;sup>1</sup> (Rome), pop. (1852—estimated), 176,000; (1871), 219,600; (1881, with suburbs, but exclusive of Agro Romano, 15,900), 284,500; (1891), 436,000; (1921), 691,000.



ST. PETER'S, ROME, FROM THE AIR.

navigable so far only by small river steamers of about  $3\frac{1}{2}$  feet draught. In the early struggles of the city this waterway must again and again have been of the greatest value in maintaining the resources of the city in time of war and promoting its recovery after disaster. Its importance must have been keenly felt when the Romans, not naturally a maritime people, showed so much perseverance and resolution in their efforts to acquire and maintain the command of the sea in the First Punic war. As the city grew it became more than ever dependent on its river, and in 409 Alaric, in his second attack on Rome, found that the readiest way to bring the city to subjection was to seize the port at the mouth of the Tiber, and thus get command of the "magazines, on which the life of the Roman people depended." <sup>1</sup>

The precise situation of Rome on the Tiber has also several important advantages. It was at the head of navigation for sea-going vessels, where seven hills rose above the plain, offering not only strong positions for defence, but sites for dwellings above the reach of the inundations of the Tiber, which were much more extensive and frequent in ancient times than now, owing to the fact that the low grounds of the city have been raised by the deposits of past generations in a much greater degree than the bed of the river.2 The country in the immediate neighbourhood was fertile over a wide district round, and while the growth of Rome depended in the first instance on its agriculture, its facilities for communication in all directions must, together with its river, have early promoted the rapid development of local trade. North-west and south-east there lies comparatively easy country, while the valleys of the

Decline and Fall, ch. xxxi.
 Nissen, Italische Landeskunde, vol. i. pp. 315, 323.

Tiber, Nera (Nar), and Teverone (Anio) afford routes northwards and north-eastwards into the mountains. The ancient Flaminian Way across the Apennines, after proceeding more or less directly to the point of the Tiber opposite the confluence of the Nera, then ascended that valley like the present railway to Terni (Interanna), after which it proceeded, like the railway, by Spoleto (Spoletum) and Foligno (Fulginium), down the valley of the Topino, another tributary of the Tiber, till the main crossing of the Apennines was reached in the Scaletta pass (north of Gubbio) about the head of the valley of the Burano torrent, a southern tributary of the Metauro.

Of the seven hills of Rome celebrated in ancient times -the Palatine, Capitoline, Aventine, Cœlian, Esquiline, Viminal, and Quirinal—the last three, namely, those lying to the east, are not properly speaking hills, but rather promontories of an otherwise continuous plateau. The modern city is spread also over the Pincio on the north, from which a magnificent view is afforded of the city, including the Janiculum and Vatican hills beyond the Tiber. The great mass of the city, which is intersected by the Corso, running in a straight line from the Piazza del Popolo in the north to the Piazza di Venezia, lies in the valley of the old Campus Martius, stretching along the northern and eastern slopes of the Capitol, Esquiline, Viminal, Quirinal, and Pincio. The Palatine, Aventine, and Coelian now belong to the district described as "Old Rome," because here are grouped together the principal remains of the classic city. Immediately behind the Capitol we look down on the venerable ruins of the ancient Forum, with the triumphal arch of Septimius Severus at our feet, and that of Titus in the mid distance, while in the background are

<sup>&</sup>lt;sup>1</sup> See below, p. 142.

the evergreen oaks of the Palatine, the Arch of Constantine, and the grand mass of the Coliseum. There are also some splendid remains of former times scattered over other parts of the city, amongst which the finest is the Pantheon, now transformed into a Christian church. The great aqueducts which supply the city with 390 millions of gallons of water daily—the Acqua



THE COLISEUM AND THE ARCH OF TITUS.

Vergine, which feeds the fountain of Trevi, the largest in the city; the Acqua Felice or Marcia, which feeds those of the Piazza di Termini; the Acqua Paola, which feeds the Fontana Paolina on the Janiculum—are also among the most magnificent remains of antiquity restored by the popes. Others have been destroyed by the barbarians, or been allowed by neglect to fall into complete decay.

Of great interest also, especially in the history of

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Christianity, is underground Rome, the region of the catacombs, an intricate labyrinth of narrow passages, 3 to 5 feet wide, 6 to 8 feet high, at a depth of 20 to 70 feet below the surface, having an aggregate length of more than 370 miles, and covering more than 600 acres. Dug out originally to supply building material (travertine and pozzolana) for the city, these passages were used by the Christians in the first three centuries of the Christian era as places of retreat in times of persecution, and the remains of millions of Christian martyrs and others are deposited in cavities dug out of the walls, so called "pigeon-holes" (colombari).

The old Rome, now almost deserted, stretches to the south of the modern city, which occupies but a small portion of the space enclosed within the present walls. These walls, with a circuit of 14 miles, comprise a total area of  $5\frac{1}{2}$  square miles, a large part of which, however, is occupied by gardens and vineyards. At present, however, the city is rapidly encroaching upon these open spaces, especially in the east, where all the railways that converge on Rome enter the city by one opening. On the Esquiline, the highest of the hills, on the Viminal and beyond the baths of Diocletian, entire new quarters have sprung up, the modern and monotonous style of which seems like a desecration of the classic soil, here often concealing the most precious treasures. The excavations on the Esquiline alone have already supplied antiquities enough to fill a new museum. In 1902 a tunnel was made under the Quirinal Hill.

Several bridges, the finest of which is the Ponte S. Angelo, the Pons Ælius of Hadrian, connect the eastern portion of the city with the smaller division, the southern quarter of which is known as *Trastevere*. Here reside

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the very lowest classes of the population. The Trasteverini, however, boast that the purest blood of ancient Rome still flows in their veins, and artists still praise the classic forms, especially of the Trasteverine. A long straight street running by the Tiber, at the foot of the Janiculum, connects Trastevere with the so-called Leonine city, where rises at the extreme end of Rome the dome of St. Peter's, with the immense palace of the Vatican adjoining it. From the Piazza S. Pietro, enclosed by Bernini's grand colonnade, a straight street leads to the Castle of S. Angelo, the old Moles Hadriani, with its round massive tower surmounted by the winged statue of S. Michael the archangel. In the Tiber is the little island of S. Bartolommeo, usually called the Isola Tiberina, opposite which, on the left bank of the river, once stood the famous Ghetto, or Jewish quarter, pulled down in 1887.

Rome is beyond all others a city of art and artists. The number of museums and collections representing every period of art is endless, offering every facility for studying the masterpieces of antique statuary side by side with the works of the Italian Renaissance. The churches and chapels also, of all sizes and of every age from the first rise of Christianity, contain an immense quantity of interesting objects, though but little now survives of the ecclesiastical magnificence at one time distinguishing Rome as the metropolis of Christendom.

Of the other cities of Latium it will be enough for the most part merely to mention the names. Most of them have come down from ancient times, at least in name, but in some cases the modern representatives, whether bearing essentially the same name or not, lie a short way off from the ancient site. In many cases the ancient towns, here as elsewhere in central Italy,

were perched high on rocky heights, while their modern successors lie on the adjacent plain. In some cases the higher site may have been chosen to avoid the malaria of the plains, but without doubt the question of safety was frequently the decisive factor in determining the choice, and the change to the plains was in some instances compulsory, the Romans in the period of their early expansion razing the cities on the heights to the ground and forcing the inhabitants to settle on some less easily defended spots. Some of the ancient cities have disappeared altogether. The ancient Etruscan Veii and Cære, so celebrated in the early history of Rome, have had the very conditions of their existence destroyed by the spread of malaria in the Campagna, though the name of the latter is preserved in that of the hamlet of Ceri, 3 miles from the Old Cære, whence the inhabitants removed to the new town in the thirteenth century, as well as in that of Cervetri, that is, Cære Vetere or Old Cære. As in many other parts of Italy, the changes of the coast-line have destroyed the value of ancient seaports. Of the old Roman Port or Port of Augustus, constructed under Claudius, at the right mouth of the Tiber on the north side of the Isola Sacra, only remains sufficient to display the former grandeur of the work were visible even in the sixteenth century, and the new port of Fiumicino, built in 1825, a little to the north of the Tiber, is quite insignificant, the real port of Rome having been for centuries much farther north, at Cività Vecchia, the ancient Etruscan Centumcellæ, separated by 50 miles of railway from the capital. This seaport having been destroyed by the Saracens in the ninth century was replaced by another town on its old site, whence its name meaning "old city." The port is of small importance, as cargo is discharged into lighters. Only

a tiny coast village, Porto d'Anzio, now represents the ancient Volseian seaport of Antium to the south of the Tiber; but Terracina, the ancient Tarracina (previously Anxur), at the point where the Appian Way first touches the coast, has still a moderate trade and population.

Among the ancient towns belonging both to the ancient and modern Latium, the former Tusculum, situated on a healthy and strongly fortified mountain site, celebrated for the villas of Cicero, Lucullus, and other distinguished Romans, was destroyed in 1191, and is now represented by Frascati, about 2 miles off, on the plains. Remains of the ancient walls of the fortress of Præneste, another favourite summer resort of the Romans of the Empire, are still to be seen on a steep and lofty hill adjoining its successor, Palestrina. Tibur is still a charming place of residence under the name of Tivoli. East of the Monti Lepini, the ancient Signia, Anagnia, Ferentinum, Frusino, and Aletrium survive in Segni, Anagni, Ferentino, Frosinone, Alatri; west of that range, the ancient Velitre and Privernum in Velletri and Piperno.

### 25. Towns: (F) Tuscany

In ancient times all the cities north of the lower Tiber belonged not to Latium, but to Etruria, the country of the Etruscans, Etrusci or Tusci, who have given name to the modern duchy and compartimento of Tuscany, in Italian Toscana. Both ancient Etruria and modern Tuscany lay between the Apennines on the north, the Mediterranean Sea and the metropolitan province surrounding Rome on the south. The civilisation of this region is older than that of Rome, and is the first native expansive civilisation of Italy of which we have any evidence, that evidence chiefly consisting in the remains of manufactures

of earthenware and bronze, which have been found not only in the place of their origin, but along trade-routes leading to distant parts of Europe, both on the shores of the Baltic and those of the North Sea. The most celebrated and populous towns of this province in ancient times were not as now in the northern plain, but towards the south, where the chief mineral wealth of the province lay and (apart from the marbles of Carrara) still lies.

Besides Veii and Cære, two other ancient Etruscan towns now included in Latium, Falerii and Tarquinii, have disappeared or sunk into mere hamlets on their original sites, but these two are both now represented by adjacent towns. Falerii or Falerium occupied a steep height near Mount Soracte on the site of the hamlet of Falleri, but the Roman colony that succeeded it on the plain, Junonia Faliscorum, still exists under the name of Cività Castellana. Tarquinii, whose necropolis has vielded an immense number of Etruscan remains, was abandoned by its inhabitants in the eighth or ninth century for Corneto or Corneto Tarquinii, a town which they founded on an opposite hill. A third, Bolsena, is still shown to have at one time been a place of importance through its having given name to the northernmost of the lakes of Latium, but the village of that name on the north-east shores of that lake has now nothing but the name to remind one of the ancient Etruscan Volsinium, which stood on a lofty hill adjoining, till it was razed to the ground by the Romans. The recollection of the old site is still perpetuated in the name of the Umbrian town of Orvieto (Urbs vetus, "old city").

Perugia (Perusia), Cortona, Arezzo (Arretium), and Volterra (Volaterræ), all, except the Umbrian city of Perugia, now in Tuscany, are all still towns of some little importance representing some other leading cities of the ancient Etrurians. Perugia 1 stands a little to the west of the Tiber, at the height of 1700 feet, on a position of great natural strength, at least with respect to the conditions of ancient warfare. In ancient times it was further strengthened artificially, and even in the declining times of the Roman empire it was able to offer a prolonged resistance to the Goths. It is still surrounded by a wall, but is not fortified in the modern sense. Cortona, which still bears its ancient name unchanged, has the most remarkable remains of prehistoric walls in Italy. Arezzo 2 is probably one of those places which have descended to a lower site, ruins on the hill known as the Poggio di San Cornelio, 2 or 3 miles to the south-east, being regarded as those of the ancient Arretium, noted for its red pottery. Volterra, strongly built on a rock, 1630 to 1785 feet above sea-level, is still surrounded by its ancient Etruscan walls having a circuit of from 4 to 5 miles, and possesses in its museum many interesting Etruscan remains. In ancient times its commercial prosperity was promoted by its possession of two seaports, both now extinct or practically so-Luna at the mouth of the Magra, in the extreme north-west of Tuscany; and Populonia, now a small hamlet on the promontory to the north of Elba. Its strength gave it importance in the Middle Ages, when it was for a time the residence of Lombard kings.

Among decayed Etruscan towns may be mentioned Clusium, previously called Camers or Camars, now the village of *Chiusi*, in the upper part of the Val di Chiana, and Russellæ, on the Ombrone. The remains of the massive walls of this latter town, a seaport commemorated by

<sup>&</sup>lt;sup>1</sup> (Perugia), pop. (1861), 14,900; (1881), 17,400; (1921), 73,000.

<sup>&</sup>lt;sup>2</sup> (Arezzo), pop. (1861), 11,100; (1881), 10,600 (including suburbs, 14,500); (1921), 52,000.

ancient writers for the succour it afforded to the Roman fleets during the second Punic war, are still to be seen on the sides of a hill about 4 miles from the modern town and fortress of *Grosseto*, to which its inhabitants removed in 1138, when the increasingly marshy nature of the plain of the Ombrone had rendered the older town uninhabitable from malaria. Near Clusium was the anciently celebrated labyrinth or sepulchre of Porsena, and there are still well-preserved Etruscan tombs in the neighbourhood.

Siena <sup>1</sup> (Sena or Sena Julia), in the heart of the Tuscan Hills at the height of 1000 to 1150 feet, in a district to which access is afforded by the valley of the Elsa, and those of the Ombrone and its tributaries, is not mentioned before the time of the Roman empire, but in the Middle Ages was a place of great commercial importance, some time the rival of Pisa and Florence, and from 1125 to 1557 the seat of an independent republic. Of this period of prosperity it has witnesses in the form of old walls and a university both dating from the thirteenth century.

Even though the mineral wealth and industries of southern Etruria may explain the former superior importance of the cities of those parts, it remains surprising that the towns of the Arno valley appear to have been so late in rising into prominence. There was no Florence in the time of the Etruscans, and this can be explained only by the difference of physical conditions. The Arno both above and below this city, at Incisa above and Golfolina below, passes through rocky gorges where, according to local tradition, the passage was made for the river by the hand of man.<sup>2</sup> Previously to this, the valley that stretches 25 miles north from Florence, with

Siena), pop. (1861), 21,900; (1881), 25,200; (1921), 44,000.
 Nissen, Italische Landeskunde, i. 305.

a width of 11 miles, must have been a lake, and long after it was still in the condition of marsh. In 217 B.C. it cost Hannibal the labour of four days and three nights to cross the marshes of the Arno.1 It is the higher plains above these marshes that are mentioned by Livy as among the most fertile in Italy,2 and that are depicted in the charming letter of the younger Pliny describing the surroundings of his Etrurian country-seat.3 Florence 4 (Florentia), in Italian Firenze, had, like so many other towns of central Italy, a predecessor on the mountains. This was Fæsulæ, now the small village of Fiesole, a little to the north-east of the city, an Etruscan town, though apparently not one of great importance, even although the La Futa Pass, which leads from Bologna (the Etruscan Felsina) to Fiesole and Florence, would appear to have been used by the Etruscans in their trade. Florence is believed to have been founded by the Romans in the last century of the Roman republic. Machiavelli points out 5 how its inhabitants gradually descended from the older city to the plains for the sake of trade, but this could only have happened as the reclaiming of the marshes created a basis for trade. the year 406 A.D. the city was strong enough to resist the Goths under Radagaisus till the arrival of Stilicho, and in the Middle Ages the city as an independent republic rose to the height that its geographical advantages when fully turned to account and seconded by civic enterprise warranted. Both in those times and later under the Medici, first as voluntarily accepted heads of the republic, afterwards (from 1530) as dukes of Tuscany.

<sup>&</sup>lt;sup>1</sup> Nissen, Italische Landeskunde, i. p. 303; Livy, xxii. ch. ii.

<sup>&</sup>lt;sup>2</sup> *Ibid.* eh. iii.

<sup>&</sup>lt;sup>3</sup> Epistolæ, v. 6.

<sup>4 (</sup>Florence), pop. (1871), 166,500; (1891), 198,000; (1921), 254,000.

<sup>&</sup>lt;sup>8</sup> Istorie fiorentine, ii. 2.

FLORENCE,

Florence became the favourite seat of learning and the arts, the birthplace and residence of a brilliant succession of poets, historians, sculptors, painters, whose names have remained familiar to all succeeding ages. has been the seat of a university since 1438, and is also noted as the seat of the once famous Accademia della Crusca. It continued to be the capital of Tuscany till 1860, when that territory was incorporated with the kingdom of Italy, of which it was the capital from 1865 to 1871. At the present day its fruitful and lovely valley, its fine situation, healthy climate, and splendid monuments, fully justify its claim to share with Venice the title of "La Bella." For her pictorial treasures, stored chiefly in the Uffizi Gallery and the Palazzo Pitti, Florence knows no rival; her collection of antique statuary is surpassed by those of Rome and Naples alone, while she is unapproached by any other city for her monuments of the sculptor's art, dating from the sixteenth and seventeenth centuries. The finest buildings are found in the centre of the city. Above all rises the dome of Brunelleschi erected in 1377-1466 to crown the magnificent cathedral, whose typical Florentine exterior, with its countless panels of white enclosed by bands of black marble, and its finely carved modern façade (dating only from 1887), produces an effect of richness contrasting with the sombre simplicity of the interior. Immediately adjoining is the beautiful campanile of Giotto, and immediately opposite, the Baptistery with the gates of Ghiberti, pronounced by Michael Angelo worthy of Round another piazza, the centre of business life, are the Palazzo Vecchio, the Loggia dei Lanzi, and the Uffizi Gallery, and another is adorned by the Church of Santa Croce, even more dazzling in its whiteness than the cathedral, and, since 1865, by a statue of Dante

#### THE PLAIN OF FLORENCE & ITS ENVIRONMENT



Main roads are shown thus.

Minor " " " "
Railways " " "

Tranways " " "

Heights in English Feet

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erected by the repentant city. Crossing the Arno by the Ponte Vecchio, with its rows of goldsmiths' shops, we reach the Palazzo Pitti with the Boboli Gardens. Over the hills encircling Florence, on the left bank of the Arno, now runs a magnificent promenade, the Viale dei Colli, with which even the Roman Pincio will not bear comparison.

On the lower Arno lies the formerly powerful mercantile republic and well-built city of Pisa, but now, in spite of her university (founded in 1338), dull and lifeless. The loss of her independence (1284) was due to the rivalry of other cities (Genoa and Florence), but the decay of her shipping, which still flourished for a time when Florence possessed Pisa as her port, was due, as on so many others parts of the coast of Italy, to the silting up of her harbour. By the deposits of the Arno not only has the fine harbour at the mouth of that river been destroyed, but the Pisan Bay of ancient times has been converted into a convex shore-line, behind which lies a long malarious flat. Witness of her past greatness is the unique, though now silent, Piazza, round which cluster four of the most glorious monuments of architecture in the world—the Cathedral; the Leaning Tower, 177 feet high, with its summit more than 10 feet from the perpendicular; the Baptistery; and the Campo Santo.

The present desolation of Pisa presents a striking contrast to the animation of the neighbouring seaport of Leghorn,<sup>2</sup> in Italian Livorno, which, with its double harbour, has become a centre of the trade with the Levant, but otherwise offers nothing remarkable. Though in ancient times a place called Labronis, near the Portus Herculis, existed on this site, it was of no consequence

<sup>&</sup>lt;sup>1</sup> (Pisa), pop. at the time of its greatest prosperity about 150,000; in the middle of the sixteenth century, scarcely 8000; (1861), 33,700; (1871), 26,000; (1881), 38,000 (including suburbs, 44,500); (1921), 68,000.

<sup>2</sup> (Leghorn), pop. (1861), 83,500; (1881), 79,000; (1921), 115,000.

till after it was bought by Florence from Genoa in 1421. At that time it had a population of only 1200. Under the Medici its growth was steadily fostered. It was made a free port. In 1541 it was connected by canal with the Arno at Pisa. In 1587-1621 a new harbour was constructed. Its present harbour, improved by works begun in 1855, can accommodate vessels up to 24 feet draught. A really charming place is the town of Lucca, the ancient Ligurian town of Luca, which boasts of one of the finest and most remarkable churches in Italy. In its neighbourhood are some well-known hot springs.

### 26. Towns: (G) The Abruzzi and the Marches

In this mountainous region, with its short eastern slopes descending rapidly to a narrow strip of plains, bordered by an unindented shore-line, there have never been many towns of much celebrity.

In the north of the chief valley of the Abruzzi that of the Aterno, with a southern tributary, Aquila, lying at the height of 2100 to 2365 feet, now takes the place of the ancient Amiternum (birthplace of Sallust), out of whose ruins it was built by the emperor Frederick II. In the south Solmona still stands on the site, as it bears the name of the ancient Sulmo (birthplace of Ovid), a little to the south of the ancient Corfinium, the town on the Aternus, which in 91 B.C. the Italian League vainly hoped to make a second Rome, cut off, though it was, from the sea by the most tremendous gorge in the Apennines, a narrow defile with precipitous walls of rock.

 <sup>(</sup>Lucca), pop. (1861), 22,000; (1881), 42,000; (1921), 78,000.
 (Aquila), pop. (1861), 12,600; (1921), 24,000.
 Nissen, Italische Landeskunde, i. 340.

Near the border of hill and plain on the east Chieti¹ takes the place of the ancient Teate,² Penne of Pinna, Teramo of Interamna, Ascoli of Asculum; Fossombrone of Forum Sempronii, on the Flaminian Way, about 3 miles below the narrow gorge anciently known as the Saxa Intercisa, now as the Pietra Pertusa or Pass of Furlo, where the united waters of the Burano and Candigliano, accompanied by the Flaminian Way, pass between walls of rock 1600 feet high. The adjoining Urbino, higher up the Metauro, but off the Flaminian Way, represents the ancient Urvinum, while Macerata replaces the town of Helvia Recina, destroyed by Alaric in 408.

On a craggy hill, 2400 feet in height, one of the last spurs of the Apennines to the south-west of Rimini, the tiny republic of San Marino, 24 square miles in extent, with a population of about 8000, has managed to maintain its independence since the fourth century, an independence generally respected by surrounding governments, and, when not respected, secured by the strength of the situation and the resolution of the people.

Of the coast towns the only one of any consequence now, as in ancient times the only one at any time of any celebrity, is Ancona, situated, as its Greek name indicates, at a marked bend of the coast-line, where the peninsula attains its greatest width. It was founded by Greeks of Syracuse about 394 B.C., and afterwards made a Roman colony. Under the Romans it became the seat of a large trade, especially with the opposite coast of Illyricum, and its harbour (now admitting vessels of 22 feet draught to the quays) was greatly improved by Trajan, an arch in whose honour stands on

<sup>&</sup>lt;sup>1</sup> (Chieti), pop. (1861), 12,900; (1881), 20,300; (1921), 29,000.

<sup>2</sup> Cf. Rieti, ancient Reate.

<sup>&</sup>lt;sup>3</sup> (Ancona), pop. (1861), 31,900; (1881), 46,400; (1921), 66,000.

one of the two moles by which it is protected. The modern city slopes to the sea between two hills, one crowned by a citadel, the other by the cathedral. Fano (Fanum), near the mouth of the Metauro, may be mentioned as the place where the Flaminian Way touched the coast. Senigallia, formerly spelt Senigaglia (the ancient Sena Gallica or Senogallia), is interesting as recalling by its name its Gallic founders, the Senones.

#### 27. Towns: (H) Liguria

The towns of this narrow strip of coast are necessarily seaports, and of these the most important now, as in ancient times, are the two, Genoa and Savona, at or near the head of the wide bay formed by this coast, whence start the easiest routes—in ancient times paved roads, now railways—across the Apennines. Of these two Genoa<sup>3</sup> (Genua, first mentioned in 218 B.C.), in Italian Genova, is inevitably the most important from its situation almost at the very head of the bay, where a minor bay forms an excellent port at the narrowest part of the Apennines, and where two easy passes, the Bocchetta 4 and the Giovi, both now crossed by railways, afford the most direct communication with the most populous part of the plain of Lombardy. The modern city, strongly fortified, lying chiefly on the east side of its semicircular harbour, rises nobly up the slopes of adjoining hills, with an aspect that justifies the fond epithet of La Superba. Probably from the time of its foundation it derived some importance from its relations with places across the Apennines, for in ancient times the land of

<sup>&</sup>lt;sup>1</sup> See above, p. 127.

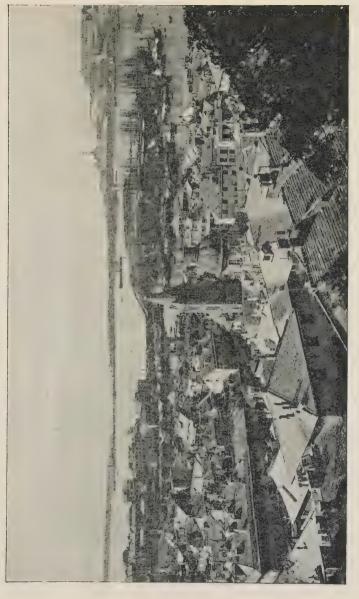
<sup>2</sup> See p. 307.

<sup>3</sup> (Genoa), pop. (1861), 128,000; (1881), 139,400; (1891), 212,000; (1921), 301,000. The English spelling is explained by the fact that the v, at least in Northern Italy, is inaudible.

<sup>4</sup> 2560 ft.

<sup>5</sup> 1550 ft





the Ligurians embraced all the southern part of Piedmont; but as late as the time of Strabo (beginning of the Christian era) its exports—timber, cattle, hides, honey -were probably for the most part the products of the neighbouring hills and mountains. Its subsequent growth may be said to be parallel to that of Milan, of which it is the natural port, and during the most flourishing period of Italian commerce, the tenth to the end of the fifteenth century, it was the great centre of trade between the Levant (where, as well as on the Black Sea, it planted numerous colonies) and the western half of the Po basin, as well as, of course, all the regions in direct communication with that plain. From the tenth to the beginning of the nineteenth century (1805) it was, with some interruptions, the seat of an independent republic. To the period of its glory its numerous palaces (the Doria-Pamfili, Spinola, Pallavicini, etc.), all rich in choice works of art, still bear witness. Genoa is the seat of a university founded in 1775, and the see of an archbishop. The Mont Cenis and St. Gothard tunnels have both in recent times helped to make it the leading port in Italy. Its harbour affords ample water-space, and vessels drawing from 25 to 26 feet of water can lie alongside of the quays, which have an aggregate length of 20,000 feet. It is the seat of numerous manufactures, and its suburb of Sampierdarena, immediately to the west (through which the road and railway from Genoa pass to cross the mountains,) carries on the building of iron and steel ships, torpedo boats, and locomotive engines. It was probably in Genoa that Columbus was born in 1447. Owing to various circumstances the port is not capable of dealing with all the traffic of its natural hinderland.

Savona (Savo, with the adjoining port of Vada Sabata,

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now Vado) has at all times been the starting-point of the principal road from Liguria across the Apennines to the south-western plains of the Po basin. In the Middle Ages it was for a time the rival of Genoa. The Genoese destroyed the port; but it is now again provided with an excellent harbour, with an entrance 25 feet deep, and a depth of from 16 to 26 feet alongside of the quays.

Spezia, at the head of the small gulf at the southeast end of the Gulf of Genoa, is the principal Italian naval station, but has never had much importance as a mercantile port, owing to the difficulty of the communications with the interior. Its gulf, however, is safe and spacious, and defensive works and arsenals have made it a fortified place of the first rank.

The whole shore of the Gulf of Genoa is lined with a close succession of towns and villages, lining a route which has been frequented for trade from very early times, though the first Roman paved road, the western half of which now forms the famous Cornice Road, or La Corniche, dates only from 13-12 B.C.<sup>1</sup> Among other places of pre-Roman date still surviving on this road may be mentioned Albenga (Albium Ingaunum, or Albingaunum) and Ventimiglia (Albium Internelium, or Albintemelium). It was to establish the security of this road that the Romans first got involved in war with the Ligurians.

### 28. Towns: (I) The Northern Plains with their Environment. (1) Emilia

The geographical unity, the fertility, the populousness of this region have already been spoken of. When

<sup>&</sup>lt;sup>1</sup> It was then that the Via Julia Augusta from Vada Sabata (Savona) to the Var was made. See Hall, Romans on the Riviera, chaps. xviii., xix. VOL. I

one considers all these circumstances, and regards by way of contrast the disrupted character of the peninsular portion of Italy, one may, at the first blush, feel a little surprise that the civilisation and conquest of Italy did not proceed from this region instead of one of the comparatively small basins to the south. But if this idea should strike one for a moment, it is at once dispelled by the reflection that these plains were not always as they now are, that the slow labour of centuries was necessary to fit them for being the seats of a dense and homogeneous population with every facility for mutual intercourse. In ancient times these broad plains revealed their fertility by the extent of their forests, and the population slowly increased only as these were cleared. When Polybius, about the middle of the second century B.C., visited the Po basin, numerous oak forests still spread over the plain, and the acorns sufficed to supply all Italy with swine. This extent of forest must have had a considerable effect on the seasonal distribution of the rainfall, which was probably then somewhat more equable throughout the year; but still more marked must have been the effect on the behaviour of the surface water, which would flow away more gradually and gently than now and keep the rivers at a more uniform level. and, from the character of the country, would be bordered by a wider and more constant extent of marsh. Hence at all seasons these rivers would be a hindrance to communication across them. The middle and lower Po. with the character already described (p. 91), would thus divide the plain into two well-marked sections; while the numerous streams, with a northerly or southerly course, would hinder communication in the plain lengthwise—that is, from east to west. All these circumstances would combine to retard the growth of a single power

in this region, which, nevertheless, from the most remote period has attracted settlers from different sides by its great fertility. And this very fertility, combined with the necessity and opportunity for turning it to account by constant clearings, left little motive for seeking to make conquests beyond the plains. Within their limits, as long as any forest remained to be cleared, there was room for expansion. The struggle for existence was less with man than with nature, and the favourable conditions made that struggle comparatively easy, though long protracted.

But notwithstanding the extent of the changes that have taken place here since ancient times, and notwithstanding the general uniformity of the surface, so marked are the conditions determining the sites of towns that here, as in the rest of Italy, the chief towns still occupy, except where the coast-line has been altered by alluvial deposits, the same sites as they have done since Roman times, and in some cases since a much more remote antiquity, and still, it may be added, for the most part bear their ancient names with only such changes as are due to linguistic decay. In many cases this striking continuity is due to the relation of these plains to their encircling mountains. This is particularly noteworthy in the case of the towns that follow one another in close succession at the base of the Apennines from Rimini to Piacenza. On this nearly straight line running from south-east to north-west, sufficiently clear of the foot hills of the Apennines to present a level and easy route, sufficiently high and near the sources of the rivers for these to be easily bridged, the construction of the Æmilian way, which now gives name to the province or "compartment" Emilia, south of the Po, the ancient Gallia Cispadana, was begun by the consul M. Æmilius

Lepidus in 187 B.C. At the mouth of each considerable valley of the Apennines, where it debouches on this road, there anciently lay, and still lies, a town of greater or less importance, in proportion to the importance of the valley—Rimini (Ariminum), Cesena (Cæsena), Forlimpopoli (Forum Popilii), Forli (Forum Livii), Faenza (Faventia), Imola (Forum Cornelii), Castel San Pietro 1 Bologna (Bononia), Castelfranco 2 Modena (Mutina), Reggio (Regium Lepidum), Parma (Parma), Borgo San Donnino (Fidentia), Florenzuola (Florentiola), Piacenza (Placentia). As many of these ancient towns were destroyed and the country round them remained uncultivated and desolate after the ravages of the barbarians who overthrew the Roman empire, the revival of so many of them on the same site is a striking evidence of the influence of the geographical conditions referred to.

Of all these the most important, as it is certainly one of the most ancient, is Bologna.<sup>3</sup> Before being made a Roman colony under the name of Bononia (191 B.C.) it was the capital of the Boii, one of the Gallic tribes who spread over a great part of the northern plains, probably in the first half of the sixth century B.C.; but previously to that it was an Etruscan colony bearing the name of Felsina, and its importance has always lain in the fact of its lying at the mouth of the valley that affords the easiest

<sup>&</sup>lt;sup>1</sup> This place grew up round a castle founded in 1200 by the Bolognese as a defence against marauders, a little to the east of the ancient Claterna, whose name still survives in the form Quaderna as that of a small stream. The map shows that, in this case, one valley has no great advantage over that immediately adjoining, so that the entire disappearance of the ancient Claterna is not surprising.

<sup>&</sup>lt;sup>2</sup> Founded in 1226 by the Bolognese for the same purpose as C. San Pietro, on the territory of the ancient Forum Gallorum.

<sup>&</sup>lt;sup>3</sup> (Bologna), pop. (1861), 89,800; (1871), 89,100; (1881), 92,700 (including suburbs, 110 500); (1891), 143,000; (1901), 152,000; (1911) 190,000; (1921), 211,000.

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route from the plains of the Po to the principal valley of Tuscany, the town lying exactly at the end of a spur of the Apennines midway between the Reno and a small stream called the Savena. It has been the see of an archbishop since the fourth century, and has long been noted as a seat of learning and education. Its university is the oldest in Europe, even if we do not carry it back to the time of Theodosius II. (beginning of the fifth century), but only to the close of the twelfth century, when it is said to have been refounded by Irnerius or Wernerus. From 1506 to 1860 Bologna belonged to the Papal States. Its strategical importance is indicated by the forts surrounding it on all sides, and the line of circumvallation embracing the town and its suburbs starting on each side from the hill at its back. On this hill, at the distance of about 3 miles from the town, stands the church of the Madonna di San Luca, which is reached by a continuous arcade. In modern times the town is an important railway junction in relation to the Poretta Pass across the Apennines into Tuscany; in ancient times it was a town on the Aemilian Way.

Rimini, colonised by the Romans as early as 268 B.C., was celebrated in the times of the later Roman republic as the last town on the east side of the peninsula in Italia proper. The Rubicon, the boundary river between Italia and Gallia Cispadana, lay a little to the north, but which of the streamlets that enter the Adriatic in this district it is to be identified with is not known. Some bring forward strong arguments for the Fiumicino, others for the Uso.

Faenza, noted in ancient times for its linen manufactures, in modern times for the variety of majolica (fayence), to which it gives name, stands about midway between Rimini and Bologna at the mouth of the valley of the Lamone.

Modena, already known in ancient times as Motina 2 as well as Mutina, stands, like Bologna, between two rivers, the Secchia and Panaro, which here approach one another. In the early Middle Ages it became the seat of a republic, but in 1288 it fell under the dominion of the house of Este, and from about 1450 was the capital of a duchy whose territory extended from the Po to the Apennines, but was at last annexed to the kingdom of Italy in 1860. In a Romanesque cathedral of the twelfth century is preserved the famous "stolen bucket" (Secchia rapita), which was the cause of feuds with Bologna in 1325, and was made the subject of a mock-heroic poem by Tassoni, a native of Modena, which is also the native place of Falropius the anatomist. This duchy included the town of Reggio,3 the birthplace of the poet Ariosto, who held various employments under the dukes, who were also at that time dukes of Ferrara. Parma 4 commands the mouths of three valleys, two of them belonging to rivers, the Parma and Baganza, that meet at the town, the third being that of the Taro, the mountain portion of which leads towards Parma. The Baganza valley is that which leads up to the La Cisa Pass, which was that generally used till the railway was made up the vale of the Taro and thence south-eastwards to Pontremoli. In 1545 the territory of Parma and Piacenza was given as a duchy by Pope Paul III. to the Farnese family, though the fortress of Piacenza was not handed over by the Imperialists till 1557. This duchy also survived till 1860. except during the troubles of the Napoleonic period.

 <sup>(</sup>Modena), pop. (1861), 32,200; (1881), 31,100; (1921), 82,000.
 Polybius has the form Mοτίνη.

<sup>&</sup>lt;sup>3</sup> (Reggio), pop. (1861), 21,200; (1881), 18,600; (1921), 83,000. <sup>4</sup> (Parma), pop. (1861), 47,100; (1881), 45,200; (1921), 58,000.

Piacenza, situated in the angle between the Po and the Trebbia, a little to the east of those spurs of the Apennines which advance close up to the banks of the Po, has retained its character of a fortress to defend the passage of that river (now effected by a magnificent iron bridge) ever since the foundation of the strong Roman fortress of Placentia in 219 or 218 B.C. It is now surrounded by a ring of forts on both sides of the Po. Among its monuments of antiquity are a cathedral of the twelfth and a communal palace of the thirteenth century.

Two notable towns situated off the line of the Æmilian Way belong to this portion of the plain. One of these is Ravenna,2 to the south of the Valli di Comacchio, once the chief Roman naval station on the Adriatic, now an inland town, 6 or 7 miles from the sea, with which it is kept in communication only by the canal Corsini. Founded, it is said, by Thessalians it afterwards became an Etruscan, then an Umbrian, then a Roman town. Already in the time of Augustus the original town was 3 miles from the sea, but that emperor constructed on the coast a capacious harbour with arsenals, magazines, and barracks, and this new town, known as Classis, soon became connected by a string of houses with the old. The whole was surrounded by walls, and these again encircled by a canal led from the Po and then "distributed by a thousand subordinate canals into every part of the city, which they divided into a variety of small islands."3 The strength of the place was further increased by a deep

<sup>3</sup> Decline and Fall, ch. xxx



<sup>&</sup>lt;sup>1</sup> (Piacenza), pop. (1861), 39,300; (1881), 35,000; (1921), 44,000.

<sup>&</sup>lt;sup>2</sup> (Ravenua), pop. (1861), 19,100; (1881), 12,100 (including suburbs, 21,200); (1921), 72,000.

and impassable morass,1 spreading over the adjacent country for miles, so that the only communication with the mainland was by means of an artificial causeway. In this natural and artificial stronghold Honorius, the feeble and timid son of the capable and warlike Theodosius, sought refuge in 404, when Alaric, at the head of the Goths, threatened Milan, and from that date till the town was taken by the Lombards in 752, under Roman emperors, Ostrogothic kings,<sup>2</sup> and (from 568) under Byzantine exarchs, "Ravenna was considered as the seat of government and the capital of Italy." 3 In witness of its long-continued relations with the Byzantine empire Ravenna still possesses some of the finest monuments of Byzantine architecture in Italy, the most celebrated being the basilicas of St. Vitalis and St Apollinaris in Classe. A pine-forest, which already existed in part in ancient times, now stretches along this coast for 25 miles, from Cervia to the Lamone, near the Po di Primaro.

The other town is Ferrara,<sup>4</sup> which is doubtfully identified with the ancient Forum Alieni, but which had no importance till the Middle Ages, when it stood, till the change above mentioned,<sup>5</sup> on the north bank of the main stream of the Po at the point when it gave off the Po di Primaro. Under the line of Este it was the capital of a duchy, a papal fief, which subsisted till 1597. Situated on a marshy flat, alternately dry and submerged, it is highly malarious.

<sup>&</sup>lt;sup>1</sup> As to the extent of those marshes in ancient times see Nissen, Italische Landeskunde, i. p. 204.

<sup>&</sup>lt;sup>2</sup> The tomb of the great Theodoric is still shown here.

<sup>3</sup> Decline and Fall, ch. xxx.

<sup>&</sup>lt;sup>4</sup> (Ferrara), pop. (1861), 27,700; (1881), 28,800; (1891), 75,600; (1921), 108,000.

<sup>&</sup>lt;sup>5</sup> See p. 93.

# 29. Towns: (I) The Northern Plains with their Environment, (2) Piedmont

In the plains of Piedmont, immediately to the west of the spurs of the Apennines that descend to the Po immediately to the west of Piacenza, the most notable fact with regard to the distribution of towns is perhaps the absence of any town in ancient times and in the early Middle Ages at the important strategical and commercial point now occupied by Alessandria, in the angle between the Bormida and the Tanaro, and at the point of convergence also of two other valleys, those of the Orba and the Belbo. This may seem all the more surprising since in ancient times there were towns of considerable importance on both the rivers that meet at Alessandria—at Pollentia, now represented by the small village of Polenza, Alba Pompeia, now Alba, Hasta, or Asta, now Asti, on the Tanaro, and Aquæ Statiellæ, now Acqui, on the Bormida. Probably the site of Alessandria was in former times too swampy to need defence or to be suitable for the site of a town. At any rate it was not till 1st May 1168 that the present town was founded by the Lombard League as a means of defence against the emperor Frederick Barbarossa, and named after Pope Alexander III., the protector of the League; and seven years later the judgment shown in the choice of the site was approved by the fact that Frederick was obliged by the inundations of the Tanaro, as well as the severity of the weather, to raise the siege of the new fortress. A short distance to the south-east is the battlefield of Marengo (14th June 1800). In Roman

<sup>&</sup>lt;sup>1</sup> (Alessandria), pop. (1861), 27,000; (1881), 29,600 (including citadel, 30,800); (1921), 78,000.

times the only considerable town in the plains to which it belongs was *Tortonu* (Dertona), a colony founded in 124 B.C. on the paved road which from the year 148 B.C. had led from Genoa across the Giovi Pass. In the Middle Ages it was a fortress of the Milanese, and its repeated razing by the emperor Frederick was the immediate reason of the foundation of Alessandria.

In the plains west of the Tanaro and south of Turin there are no important survivals from Roman times, but here again we may note the situation of towns at the mouths of valleys or the point of convergence of two or more valleys (Cuneo, Saluzzo, Pinerolo).

Of all the valleys in this region that which penetrates farthest into the mountains and attains the greatest width is that of the Dora Riparia, which leads westwards up to the passes of Mont Cenis and the Mont Genèvre. In this valley the most important town has always been that known in ancient times as Segusio, in the Middle Ages as Secusia, and now as Susa, situated at the junction of the roads leading from both these passes. It was the capital of the country which embraced the valley of the Dora Baltea as well as that of the Dora Riparia, and which, after passing by inheritance in 1073 to the house of Savoy, grew into the principality of Piedmont, and then successively into the kingdom of Sardinia and the kingdom of Italy. But the chief town of the plains belonging to the basin of the Dora Riparia, another town of great antiquity and at all times of great importance, is Turin, in Italian Torino, lying not at the mouth of the valley, but in the angle formed by the junction of the river with the Po, a few miles to the east. Having been colonised by Romans it received, under

<sup>&</sup>lt;sup>1</sup> (Turin), pop. (1861), 180,500; (1881), 226,300; (1891), 329,800; (1921), 502,000.

Augustus, the name of Augusta Taurinorum; but in the modern name there survives, as in so many French towns, only that of the tribe, the Taurini, who are said to have been Celto-Ligurians, formed by the union of Ligurians with Gauls, who had entered the Italian plains across the Mont Cenis Pass. Its modern import-



TURIN: PIAZZA S. CARLO.

ance dates more particularly from 1418, when it was made the capital of the dominions of the house of Savoy; and in its aspect and even in its ground-plan, which resembles that of the cities of new countries and ancient Roman colonies—its wide and handsome streets crossing one another mostly at right angles—it shows the results of princely care bestowed on its growth for centuries. It has beautiful palaces and churches. Its Museo Egiziano is one of the finest museums of Egyptian

antiquities in Europe, and contains also many interesting remains of Greece and Rome. In its Armeria there is preserved a rich collection of arms and armour from the most ancient down to modern times. Superga, the highest of the Monferrat Hills in the neighbourhood of the city, on the right bank of the Po, now accessible by a rope railway, is renowned for its magnificent view of the Alps, and bears on its summit (2140 feet) a fine basilica, erected by Amadeus II. to commemorate the victory over the French of the 8th of September 1706.

# 30. Towns: (I) The Northern Plains with their Environment. (3) Lombardy

In the plains north of the Po the towns which at the last census had a population of more than 20,000 are Milan, Vercelli, Pavia, Cremona, Lodi, Bergamo, Brescia, Mantua, Verona, Padua, Treviso, and Udine, and all of these except Udine bear names that have come down to us with more or less modification from Roman times.

Most important of all now, and at all times since these northern plains became populous, is *Milan*,<sup>1</sup> in Italian *Milano*, a corruption of the ancient Mediolanum, or, as it is called in inscriptions, Mediolanium. It is now the second town in population in Italy; and while historical causes during a long period gave political pre-eminence to Turin, the continuity of its commercial and industrial importance, as well as the political pre-eminence which it long enjoyed in ancient times, may be taken as evidence of the natural advantages of the site on which it is built, although distinguished by

<sup>&</sup>lt;sup>1</sup> (Milan), pop. (1861), 196,100; (1881), 214,000 (including suburbs, 321,800); (1891), 424,000; (1921), 718,000.

no marked physical features. Its river, the Olona, is an utterly insignificant stream, but this in a region where the rivers are so apt to overflow their banks is rather an advantage than otherwise. This advantage would be all the more decisive at the time when it was first settled, early in the sixth century B.C. by the Gallic Insubres, to whom its foundation is traditionally ascribed. Its chief positive advantage, however, lies in the fact that it is



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somewhat centrally situated in a plain of extraordinary fertility; but to this has to be added the important consideration that it lies at the crossing-place of two great routes marked out by physical conditions, one from east to west and one from north to south. The east to west route is the line running through the whole length of the northern plains sufficiently near the mountains to find easy crossing-places on the numerous rivers. Eastwards from Milan it passes by Brescia (Brixia), Verona, Vicenza (Vicetio), Treviso (Tarvisium),

and in ancient times may be said to have terminated at Aquileia, the centre of exchange between east and west. Westwards from Milan it passes by Novara (Novaria), Vercelli (Vercellæ), and Ivrea (Eporedia), and then up the valley of the Dora Baltea to Aosta (Augusta Prætoria Salassorum), the colony and fortress founded by Augustus to command the passes leading past both ends of Mont Blane (the Great and Little St. Bernard), and more particularly the newly-made paved road into Gaul across the Little St. Bernard. In ancient times and throughout the greater part of the Middle Ages the chief passes across the Alps to the middle of the northern plains are those which debouch on Lake Como (Lacus Larius). The principal seaport of this region has at all times been Genoa. The direct road connecting the north side of the Apennines at the base of the Giovi Pass with either of the southern ends of Lake Como passes with little deviation through Milan; but in Roman times, when there seems to have been no direct connection between Pavia (Ticinum), the crossing-place of the Ticino, and Tortona, it was probably of more importance that Milan is at the point where the direct continuation of the Æmilian Way north of the Po joins the east-west route above indicated, and that the further continuation of the same north-westerly route leads direct to the foot of the Lago Maggiore (Lacus Verbanus). In those times there was no road across the St. Gothard, but there was an ancient road by the east side of this lake to the Bernardino Pass, and Nissen<sup>2</sup> considers it very probable that at least in late Roman times a road led (as now) to the west of this lake across the Simplon Pass. In any case, when all the passes by

See below, p. 362.
 Italische Landeskunde, p. 161.

Lakes Como and Maggiore came to be opened, they would still further increase the importance of Milan as the point of convergence of the roads across them. No other inland place in the northern plains combines such advantages. Hence it early became an important seat of commerce, and afterwards of industry. Hence more than once it rapidly rose again under disaster, and throughout all the political vicissitudes of Italy retained its leading position in respect of wealth and population among the inland cities of the north. At the time of the Roman conquest in 222 B.C. it was already the chief city of Cisalpine Gaul. It was frequently the headquarters of the Roman emperors when preparing expeditions for the northern frontier. It was the regular residence of the western Roman emperors in the time of peace from the time of Maximian (close of the third century A.D.) down to the year 404.1 It was destroyed by the Franks in 539 and sacked by the Lombards in 568, but on each occasion soon regained its prosperity, and though pillaged and razed by Frederick Barbarossa in 1162, it was soon rebuilt and enforced its independence from that emperor in 1174. Thereafter began its most flourishing period, when the ports of northern Italy, above all Genoa and Venice, took the lead in the maritime commerce of Europe, and the northern plains shared their prosperity. The woollen and silk industries of Milan are then said to have employed 100,000 persons. In the first portion of this period its government was republican, but from 1277 to 1535 it was under the sway of counts or dukes of the houses of Visconti and Sforza. The territory then passed into the hands of Spain, and next into those of Austria, with which it remained till 1859, when it was annexed to the

<sup>&</sup>lt;sup>1</sup> See above, p. 152.

kingdom of Sardinia. Of the monuments of its most flourishing period the most celebrated is its cathedral, founded by Count Gian Galeazzo Visconti in 1386, and built in a style (pointed Gothic) which marks the intimacy of the relations of the city with Germany. It is entirely of white marble, and is adorned with 122 spires or turrets and six thousand statues, and is specially celebrated for the delicacy of its carving. Of greater antiquity is the basilica of St. Ambrose (dedicated to the celebrated bishop who held the see from 374 to 397), in the early Middle Ages the place of coronation of the German emperors as successors to those of ancient Rome—a fact that marked once more the political consequence of this central city of the northern plains. Among other churches may be mentioned that of Santa Maria della Grazia, in which is the famous "Last Supper" of Da Vinci (now nearly obliterated). Of the architectural works of modern times the most noted are the opera house, known as La Scala, seated for an audience of 3600; the Arco della Pace, at the terminus of the Simplon Road, erected in 1807-1838; and the glass-covered street or arcade, called the Galleria Vittorio Emanuele. It is remarkable that Milan has never been the seat of a university, though the Ambrosian Library, founded by Cardinal Borromeo in 1609, and celebrated for its collection of palimpsests, is considered as the oldest public library in Europe; and the city also possesses a royal academy of arts and sciences with another large library, as well as collections of paintings and archeology, and an astronomical and magnetic observatory. Among the natives of this city were Cesare Beccaria, the celebrated jurist, and the novelist Alessandro Manzoni

North of Milan at the south-west end of Lake Como





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(Lacus Larius) stands Como 1 (Comum), the starting-point of the lake-voyage leading to the pass roads to the valley of the upper Rhine, as well as to that by the Valtellina (upper Adda) to the Stelvio. In ancient times the lake was larger than now, and was navigable as high as Samolaco (Summus lacus), four and a half miles in a direct line below Chiavenna. (See below, pp. 361, 369.) Lecco (Leucera), at the end of the south-eastern arm of the lake, is the terminus of the road leading to these passes by the east side of the lake.

East of these towns, situated like them and like the towns of the Æmilian Way at or near the opening of mountain valleys on the plain, lie Bergamo, Brixia, and Verona. Bergamo<sup>2</sup> lies like Bologna at the end of a hill between two valleys-those of the Brembo and the Serio, the latter of which yields iron-ore for furnaces in the valley. Much more important, however, are the excellent iron-ores of the Val Trompia, which have made Brescia,3 the town at its mouth, renowned for eight centuries for the manufacture of arms and armour. Verona, in the time of the Roman empire one of the most flourishing towns of northern Italy, derives its importance from its situation at the point where the route from the Brenner is crossed by the great east-west route of northern Italy, and latterly from the fact of its being made a strong fortress for the defence of the Brenner route. It was the place to which the great Ostrogothic king Theodoric, the "Dietrich von Bern" of the Nibelungenlied, transferred his seat when he had to

<sup>&</sup>lt;sup>1</sup> (Como), pop. (1861), 11,600; (1881), 10,900 (including suburbs. 25,600); (1921), 48,000.

<sup>&</sup>lt;sup>2</sup> (Bergamo), pop. (1861), 24,600; (1881), 23,800; (1921), 62,000. <sup>3</sup> (Brescia), pop. (1861), 40,500; (1881), 43,400; (1921), 96,000.

<sup>4 (</sup>Verona), pop. (1871), 60,000; (1881), 61,000; (1921), 92,000.

watch the tribes beyond the Alps. It is one of the four fortresses of the celebrated Quadrilateral, of which the other three are Legnago, also on the Adige, and Peschiera and Mantua on the Mincio. Among its many interesting remains of past times are those of a well-preserved Roman amphitheatre capable of accommodating 60,000 persons, its twelfth century cathedral, the fourteenth century castle in which the Scaligers lived, and the magnificently sculptured tombs of the Scaligers, together with many Renaissance palaces.

Another east-west route north of the Po but south of Milan was marked in ancient times by the towns of Rigomagus, now the small town of *Trino* (south-west of Vercelli); Launellum, now *Lomello*; Ticinum, now *Pavia*, *Mantua*; Hostilia, now *Ostiglia*; Ateste, now *Este*.

Of these Cremona, Pavia, and Mantua are the only ones that retain anything of their former importance, but it is perhaps worth noticing that the former importance of Lomello is still shown in its having given name to the quadrangular district of Lomellina between the lower Ticino, the lower Sesia, and the Po, in the middle of which now lies the great railway centre of Mortara. Cremona, the forts adjoining which still remind one of its original purpose, to defend a passage of the Po, for which it was founded by the Romans in 219 B.C., is not so flourishing now as it was in Roman imperial times. Pavia, situated on the Ticino near its junction with the Po, a little to the north of that buttress of the Apennines which compels a divergence of roads south-west and south-east, also looks to the past as the period of its greatest renown. From 568 to 774 it was the capital of the Lombard kings, and it was a place of great consequence throughout the Middle Ages. From the year

<sup>&</sup>lt;sup>1</sup> (Cremona), pop. (1861), 31,000; (1881), 29,000; (1921), 59,000.

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1300 it has been the seat of a university, which has numbered among its professors Spallanzani, the naturalist, Volta, the discoverer of voltaic electricity, and Scarpa, the anatomist. Its modern name, though unlike the ancient, is of Roman origin, Ticinum having been in later times known as Ticinum Papia, from the name of the tribe by



PAVIA: THE CERTOSA.

which it was colonised, and from the time of the Lombards the latter part of this compound name was used by itself. Five miles north of Pavia is the magnificent Carthusian monastery (now secularised), known as the Certosa di Pavia, founded in 1396 by Count Gian Galeazzo Visconti, already mentioned as the founder of the cathedral of Milan. Mantua, in Italian Mantova. owes its natural strength largely to the fact that the

<sup>&</sup>lt;sup>1</sup> (Mantua), pop. (1871), 26,700; (1881), 28,000; (1921), 36,000.

Mincio here expands into two lakes protecting the town on the north-west and the east, the river flowing as a sluggish connecting channel along the north. These lakes existed even in ancient times, though not exactly in their present form, which is partly artificial. It possesses a statue to the poet Vergil, a native of the village of Pietole (Andes), a few miles to the south-east. Ostiglia (Hostilia) stands at a point where the Po was crossed by an ancient Roman road, that leading direct from Bologna to Verona, and the entrance to the Brenner, as it now lies on the railway connecting these two places; but it has never been a town of any consequence.

In ancient times the road running north-east from Bologna joined the eastern road from Mantua at *Este* (Ateste), which then stood on the Adige (Atesis). The change of course of this latter river, which now flows farther to the south, is ascribed to an inundation which took place in 589 A.D. From Este the road ran north-eastwards to Padua, and then by the Adriatic seaports, Altinum and Concordia, to Aquileia.

Of these towns Padua <sup>1</sup> alone retains its importance in modern times. The others, Aquileia formerly in Austria, Concordia, a mile or two south of Portogruaro, and Altinum, in the marshes at the north end of the Venice lagoon, 8 miles north north-east of Venice, still survive at least in name, Concordia still recalling its ancient importance in being the see of a bishop; but they are all mere inland villages or hamlets, though two of them at least, Aquileia <sup>2</sup> and Altinum, were wealthy cities, Altinum deriving great importance from being the northern terminus of a line of inland waterways, safe from storms and pirates, extending to Ravenna. The silting up of

<sup>&</sup>lt;sup>1</sup> (Padua), pop. (1871), 44,600; (1881), 47,300; (1921), 112,000.

<sup>2</sup> See p. 88.

the coast, the neglect of agriculture, with the consequent spread of malaria, and other changes, have prevented them from recovering from the destruction which they all underwent along with Padua at the hands of Attila in 452. Padua (Patavium), in Italian Padova, the birthplace of the historian Livy, early became one of the most flourishing cities in northern Italy. Situated at the point where the road coming from the seaports just mentioned forked for Vicenza and Verona, etc., on the one hand, and Este, Mantua, etc., or Este and Bologna on the other hand, it was an important centre of trade, and it was likewise the seat of large manufactures, especially of woollen stuffs. At a later date it stood in the same relation to Venice as it had done to the more northerly seaports (the intervention of the lagoon and the low marshy land adjoining preventing the establishment of a more direct route from Venice to Bologna), and this advantage of situation enabled Padua to recover not only after the ravages of the Huns, which for ever destroyed Altinum and Concordia, but also after being razed to the ground by the Lombards towards the end of the sixth century, and again destroyed by the Magyars in 900. Throughout the Middle Ages it was a place of much celebrity. It is the seat of a university the foundation of which is (doubtfully) referred to the year 1222, and it has several churches and other buildings from the thirteenth and fourteenth centuries. An observatory occupies the tower of the palace of Ezzelino da Romano, tyrant of Padua in the thirteenth century. In front of St. Anthony's church (finished 1307) stands a magnificent equestrian statue by Donatello.

## 31. Towns: (I) The Northern Plains with their Environment. (4) Venetia

Though the ancient cities at the head of the Adriatic were destroyed in the middle of the fifth century it was impossible that the great northern plains should remain without a seaport. The blow that proved fatal to Aquileia, Concordia, and Altinum, indirectly gave birth to Venice. Many of the inhabitants of those ruined cities took refuge in the islands of the littoral stretching from the Isonzo to the delta of the Po, where a broken line of sand-dunes forms the shore-line, now backed in some places by shallow lagoons and in others by marshes, but in those times apparently one continuous lagoon. Eighty years later Cassiodorus, the minister of the emperor Theodoric, describes these islanders as living solely on fish, and possessing nothing but salt as a means of barter with other communities. But their prosperity grew with the return of settled conditions in the plains behind. They "penetrated into the heart of Italy by the secure, though laborious, navigation of the rivers and inland canals." It was long before any of these settlements rose into fame, but the memory of their origin did not die out. For fourteen centuries the simple designation of Patria ("fatherland") survived among the Venetians in tradition and legislation for Friuli (Forum Julii), the country round Aquileia, and for centuries the archbishops of the decayed city of Aquileia, as distinguished from those of Grado or New Aquileia, were treated by the Venetians with the greatest respect.<sup>3</sup>

<sup>1</sup> Decline and Fall, ch. xxxv.

<sup>&</sup>lt;sup>2</sup> Czoernig, Das Land Görz und Gradisca mit Einschluss von Aquileia (Vienna, 1873), p. 181, n. <sup>3</sup> Ibid. p. 242,

The group of adjacent islets on which arose Venice,1 in Italian Venezia, the city of the Veneti, had the advantage of being the largest, together with that of being opposite the mouth of the Brenta (Medoacus), one of whose canalised arms still affords access to Padua. If the Adige had continued to flow in its old course, so as to enter the sea about the site of Chioggia (Clodia, Clugia, Chiozza), the rising Venice would probably have found a much more formidable rival in that city than she actually had to encounter; but the change above mentioned, by which the mouth of the Adige was shifted southwards, left to Venice unquestionably the easiest access to Padua, to the line of cities already enumerated along the base of the Alps, and to the mouth of the Brenner. At the same time the city was removed from possible navigation troubles due to the silt brought down by the rivers and deposited in the immediate vicinity of their mouths. Before the close of the seventh century (697) the Venetian islanders are found united under a duke (doce, doge), but the first seat of this doge was on the island of Eraclea. Not till 810, after Pepin had penetrated into the lagoon and threatened the independence of the amphibians, was the seat of government transferred to the smaller but more secure islet of Rialto (Rivus altus), an event from which the city of Venice may be said to take its rise. In 827 or 828 Venetian merchants are found in the Levant, that being the time when the Venetians are said to have brought from Alexandria the bones of their patron St. Mark. An important point in their history was that these islanders throughout the period of their rise maintained their allegiance to the eastern Roman empire, in consequence of which they enjoyed the privilege of customs-free commerce with the

<sup>&</sup>lt;sup>1</sup> (Venice), pop. (1871), 128,100; (1891), 149,000; (1921), 172,000.

imperial ports. Conquests increased not only their power but their commercial prosperity. Dalmatia was already in their possession in the tenth century, and during the following centuries Venice gradually denuded the Dalmatian slopes of their forests in procuring timber for their fleets. Under the protection of the Crusaders colonies were founded in the Levant. In 1124 one-third of the city of Tyre was in Venetian lands. There was an independent Venetian colony even in Aleppo outside the dominion of the Christian rulers (to the east of the principality of Antioch). Their power and commercial interests in the Levant were greatly promoted by the result of the fourth crusade, which at the instigation of Venice was diverted from its proper purpose, and directed against Constantinople (1204). Venice thereby came into possession of several important points in the Ægean. From 1206 she held possession of Crete, which was retained till 1669. These conquests brought about a prolonged war with her rival Genoa, which had previously established herself at various places in the Levant, and though Venice was at times worsted, she was finally victorious and her power established in the peace of Turin (1381). Meanwhile she had begun to acquire dominion on the neighbouring mainland. Treviso was brought under her rule in 1338. Friuli was added in 1420. By the close of the fifteenth century she was mistress of a territory extending to the Adda and the outskirts of Lecco, conterminous with that of the duchy of Milan, and this she retained (though not uninterruptedly) till the overthrow of her dominion by Napoleon and the transference of her Italian territory (all that then remained to her) to Austria in 1797.

<sup>&</sup>lt;sup>1</sup> See the terms of the charters of 1082 and 1148 (in the latter of which the ports of Cyprus and Crete are expressly included) in Heyd, *Geschichte des Levantehandels*, i. pp. 132, 133.

Long before this, however, her commerce had declined. She suffered even more than Genoa by the discovery of the seaway to India (1498), and shortly after (1517) by the conquest of Egypt by the Turks, which placed still further obstacles in the way of trade with the East by way of Alexandria. The suddenness of the change brought about by the first event is shown by the fact, recorded by a contemporary chronicler, that in February 1504 the Venetian galleys returned from Alexandria, in March of the same year from Beirut, empty.

The city of Venice, Venezia la Bella, spreads over 118 islands, and lies about  $2\frac{1}{2}$  miles from the mainland, with which it is connected by the railway to Mestre. The facades of the houses are mirrored in the 157 canals, which here serve as the ordinary thoroughfares, the Grand Canal, 230 feet wide and more than 2 miles long, winding picturesquely through the city, flanked by a double line of Gothic and Renaissance palaces dating from the most brilliant period of art, some of them enriched with the priceless art treasures of the Venetian school (Tintoretto, Palma, Carpaccio, Giorgione, Titian, Veronese, etc.). Among the numerous monuments of the ancient grandeur of the city some of the most remarkable are the splendid cathedral of St. Mark, begun in the ninth century, and continued more or less in all subsequent centuries; the great marble bridge of the Rialto, dating from 1591, the only bridge till the nineteenth century across the Grand Canal; the former Palace of the Doges, alongside of the Palace Canal, which is crossed by the Ponte della Paglia (1360), and the Bridge of Sighs, which leads from the Palace of the Doges to the former State prisons (1592-97); the palace known as the Ca' (that is, Casa) d'Oro or House of Gold. a rich and elegant specimen of fourteenth-century Gothic:



VENICE.

the rich library of St. Mark, and the Grand Arsenal, with its cannon foundry.

The oldest of these monuments in the style of its architecture, which is almost pure Byzantine, is a standing illustration of the intimacy of the relations of Venice to the Byzantine empire at the time of her rise, and among other witnesses of Byzantine influences still surviving may be mentioned the gondola, which is said to be only a modified form of the caique of the Golden Horn and the Bosporus.

So completely has the development of oceanic shipping and of machine industry depending on coal altered the course of modern commerce, that even the opening of the Suez Canal has not yet done much to restore to Venice her former mercantile greatness. Still, steps have been taken to enable the port to meet the requirements of modern shipping. The two channels which lead directly to Venice through the lidi, the Lido channel to the north and the Malamocco to the south, have been deepened to about 30 feet, the Lido channel only in 1894, since which date it has been the one most used, as being the more direct of the two. The channels are protected by long moles, which assist in maintaining the depth of the water by promoting the scouring action of the tide, which at ebb runs at the rate of  $5\frac{1}{2}$  feet per second in springs, and  $1\frac{1}{2}$ -2 feet in neaps. Vessels drawing as much as 24 feet can reach the quays (partly on the main islands, partly on that of Giudecca 1 to the south) at any state of the tide. The commerce is mostly a transit trade.

The island of *Murano*, immediately to the north of Venice, has been famous since the eleventh century for its glass-works, which are still carried on, though the

<sup>1</sup> Once the Jews' quarter. This, however, was afterwards in another part of the city.

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island is no longer renowned as it once was for its mirrors. *Burano*, farther north, is a seat of lace-making.<sup>1</sup>

# 32. Sicily-Physical Features and Products

Sicily, the largest island in the Mediterranean, sometimes known to the ancients, owing to its triangular shape, by the name of Trinacria, rises with precipitous shores beyond the narrow straits of Messina, about 2 miles in width, formerly dreaded for the terrors of Scylla and Charybdis.<sup>2</sup> This island, like the Italian mainland, is, with the exception of a few low-lying tracts, such as the Plain of Catania, for the most part occupied by mountains, but there is only one well-marked range, that of the Monti Nebrodici, which stretches westwards, parallel to the north coast, with a narrow crystalline core, from the north-eastern angle of the island, and attains its highest elevation in the peak of Sori (6055 feet). To the west rise the group of the Monti Madonie (6480 feet), mainly composed of Jurassic limestones.

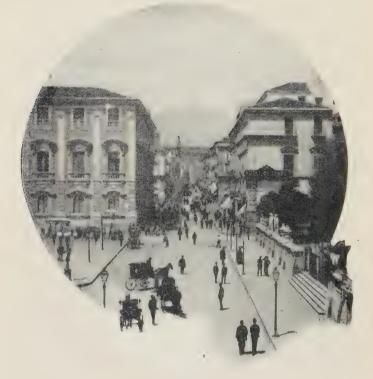
In contrast with the many abrupt elevations, the volcano of *Etna*,<sup>3</sup> north of Catania, on the east of the island, rises to a height of 10,865 feet, with a slope so gradual that the area of the base is estimated at several hundreds of square miles. It is only in its upper portion that its general outline becomes very steep; but on the eastern slope of the volcano there is a vast amphitheatre,

<sup>&</sup>lt;sup>1</sup> For Trieste see p. 88, and Fiume see p. 184.

<sup>&</sup>lt;sup>2</sup> See Keller, Scylla and Charybdis, in Annalen der Hydrographie (1891), pp. 297-303, and notice by Krümmel in Petermanns Mitteil. (1893), p. 153 of Litteraturbericht, the main particulars from which are given in Longman's (now The Times) Gazetteer, under Messina, Strait of.

<sup>&</sup>lt;sup>3</sup> Mount Etna is known in Sicily as Mongibello, a name derived from the Latin mons and the Arabic gibel, "a mountain."

probably the relics of an ancient crater, called the Val del Bue,<sup>1</sup> the precipitous sides of which are partly 3000 feet in depth. These cliffs are entirely formed of ancient



CATANIA AND MOUNT ETNA.

streams of lava, pierced by numerous dikes, the whole revealing a remarkable view of a considerable part of the interior of the mountain, and giving clear indications of

<sup>&</sup>lt;sup>1</sup> Frequently known by translation into the classical language of northern Italy as the Val del Bove.

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its gradual growth by repeated eruptions. Numerous minor eruptive cones dot the sides of the mountain, as well as the bottom of this great hollow. Eruptions from the summit of Etna have long ceased, or are at least very rare.

The observatory on Etna, at the height of 9650 feet above sea-level, was the highest building in Europe, till the erection of that on the Sonnblick in Salzburg.

As in ancient times, the principal cereal of Sicily is wheat, which occupies much more than twice the area under all other cereals and all leguminous crops. As in southern Italy generally the olive is also largely grown, but the chief industries connected with export commerce are the production of oranges, wine, and sulphur. Wine is mainly grown in the west of the island (that of Marsala in most repute), while oranges are most abundant on the northern and eastern slopes. Among other vegetable exports may be mentioned sumach, used in dyeing; manna, derived from a species of ash; liquorice, and saffron. The cochineal cactus flourishes throughout the island, and the papyrus of the Nile is found in the Anapus, near Syracuse, its only locality in Europe.

Sulphur is mainly worked in the Miocene rocks of Caltanissetta, Girgenti, and Catania. A peculiar variety of amber is obtained from the Simeto; and agates, which take their name from the river Achates in this island, are found in the beds of some of the rivers.

# 33. Sicily-Population and Towns

If Italy as a whole presents an epitome of the tragedy of human history from one point of view, Sicily does so in a special degree from another. With a sunny climate, sufficient rains and a fertile soil, situated in the middle of the Mediterranean in the direct route of merchants and settlers from east and west, north and south, it was one of the earliest islands of that sea to become the seat of numerous flourishing cities with an advanced culture, but has suffered more frequently perhaps than any other from the intentional and unintentional misdeeds of man. Among its inhabitants, invaders and rulers, Sikanians and Sikelians, Phœnicians, Carthaginians and Greeks, Romans and Byzantines, Vandals, Saracens, Normans, French, Germans, Spaniards and Neapolitans have succeeded one another, and none of these successions was without its accompaniments of violence and destruction. Invasions, conquests, tyrannies, exactions, revolts, rebellions, repressions, massacres have been terribly frequent incidents in the history of the island, and have contributed to the lamentably frequent recurrence of famine and pestilence, while on other occasions wide ravages have been wrought by earthquakes 2 and volcanic outbursts.3 The results, which must have been all the more disastrous when a population had grown up dependent for its existence to a large extent on the maintenance of complex economic conditions, are to be seen in the variations of the population.4 Even peaceful labours have not been

<sup>&</sup>lt;sup>1</sup> In 561, 706, 1347-48 (when the Black Death raged as terribly as elsewhere, but spared to a singular degree the capital), repeatedly in the latter part of the fifteenth century from 1474 onwards; in 1523-30, 1575-76, 1590-91 (when about 200,000 are said to have perished), etc.

<sup>&</sup>lt;sup>2</sup> The earthquake of 7th-9th January 1693 is said to have destroyed the lives of 56,800 people, chiefly in the north-east of the island.

<sup>3</sup> Many lives were lost in the eruption of Mount Etna in 1539.

<sup>&</sup>lt;sup>4</sup> Maggiore-Perni in La Popolazione di Sicilia e di Palermo dal X al XVIII Secolo gives estimates of the population based on statistical data of some kind from about the year 972 downwards, but the earlier estimates involve much arbitrary assumption. Since 1548, however, there have been fairly trustworthy partial enumerations of the population of Sicily, affording better bases for estimates of the whole, and the results of some

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without their pernicious consequences. Here as elsewhere in the Mediterranean 1 the plains have suffered through denuding the hill-slopes of their forests. The Sicilian peasant descending from the interior stares with amazement at the elms and plane-trees in the public gardens of Palermo.

With such a history it is not perhaps to be wondered at that, as already intimated, resistance to the law should be more or less organised in the Mafia,<sup>2</sup> and that while parts of the island, the districts of the orange-groves and vineyards, exhibit cheering signs of prosperity, there is in other parts a country population sunk to a state of extreme destitution, such as can rarely be paralleled elsewhere except amongst the dregs of great cities.

As in ancient times the chief towns of Sicily are on the coast, but Syracuse,<sup>3</sup> the most celebrated and probably the most populous of all the Sicilian towns of antiquity, is now a place of little importance. Founded as a Dorian colony from Corinth in 735 B.C., it grew so rapidly that in the early part of the fifth century B.C. it had a circuit of 22 miles and is estimated to have contained a population of half a million. Now it contains only about one-twentieth of that number. It suffered greatly at the

of these estimates down to the end of the eighteenth century are given below:—

Year.	Thous.	Year.	Thous.	Year.	Thous.
1548	1010	1615	1159	1714	1383
1574	1098	1637	1298	1737	1477
1583	1090	1653	1192	1748	1502
1597	1048	1681	1288	1798	1916

The population in 1861 was 2,392,000; in 1871, 2,584,000; in 1881, 2,928,000; the estimated population in 1891, on the basis of the mean rate of increase from 1871 to 1881, 3,318,000, showing a density of 333 to the square mile; (1921), 4,132,000.

<sup>&</sup>lt;sup>1</sup> See above, p. 102.

<sup>&</sup>lt;sup>2</sup> See above, p. 105.

<sup>&</sup>lt;sup>3</sup> (Syracuse), pop. (1861), 17,400; (1881), 21,200; (1921), 65,000.

hands of the Arabs in 878, and much of it was ruined by the earthquake of 1693, but its decay must be largely ascribed to malaria, which, as may be seen from the map between pp. 100 and 101, infects this corner of Sicily more than any other. In ancient times noted for its wheat, the chief products are now wine, olives, oranges, and lemons. Notwithstanding its decay Syracuse still possesses a bright and cheerful aspect, and there, it is said, the life of the Hellenes may be seen surviving to the present time. Its Doric cathedral, formerly the temple of Athene, has been a place of worship continuously for 2500 years, and the church of St. Marcian claims to be the oldest edifice in Europe erected for Christian services. Catania,1 the ancient Catăna or Catina, another Dorian colony, at the base of Mount Etna and the northern margin of the plain of the Simeto, the outlet for one of the most fertile parts of the island, was an important city in late Roman times, and has greatly prospered in the present century. Farther north the ancient Tauromenium still survives in the small coast village of Taormina, but Messēnē or Messana still retains, in the form Messina, essentially the same name as in ancient times, and still, in virtue of its situation and the excellent natural harbour, sheltered by the sickle-shaped peninsula to which it owed in ancient times its other name of Zangkle, remains one of the chief seaports of the island, though the province to which it belongs is too mountainous to be highly productive.

<sup>&</sup>lt;sup>1</sup> Pop. (1748), 26,000; (1798), 45,000; (1861), 64,900; (1871), 83,500; (1881, including suburbs but excluding remote parts of commune), 96,000; (1891--estimated), 117,500; (1921), 255,000.

<sup>&</sup>lt;sup>2</sup> Pop. (1748),40,000; (1798), 46,000; (1861), 62,000; (1871), 70,300; (1881), 81,000 (city and suburbs); commune, 126,000; (1891—estimated), 142,500; (1921), 177,000.

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Ships of the largest size can find ample depth alongside its quays. The earthquake of 28th December 1908 totally destroyed the town with the exception of the facades of some of the more important buildings. On the south coast the ancient Dorian colonies of Gela. Phintias and Akragas are replaced respectively by Terranova, Licata (with large exports of sulphur) and Girgenti, the last derived from Agrigentum, the Roman name of Akragas. As a port Girgenti, which is situated a little inland, includes not only its own harbour of Porto Empedocle, but also Licata and Siculiana, In the west of Sicily foreign settlements have chiefly been made from the neighbouring coast of Africa, and hence it is that the early Phœnician and Carthaginian and the later Saracen settlements were formed in this part of the island. Palermo, on a fine bay on the north coast, though bearing a name corrupted from the Greek Panormos, meaning "all-harbour," was originally a Phoenician foundation. This was a favourite Greek name for places with natural or artificial harbours affording shelter from all winds, and in this case referred to the admirable harbour-works constructed by the Carthaginians, or even perhaps by Phænicians from Syria. It stands at the mouth of a fertile valley known as the Conca d'Oro ("Golden Shell") in the part of the island least affected by malaria, and from the time of its foundation down to the present day has been one of the chief seaports, as it has long been the most populous town in the island. From Arab times onwards it was the capital of the island as long as the island was in-

<sup>&</sup>lt;sup>1</sup> (Girgenti), pop. (1861), 15,900; (1881), 20,000; (1921), 30,000.

<sup>&</sup>lt;sup>2</sup> Pop. (1583), 119,000; (1653), 137,000; (1748), 177,000; (1798), 212,000; (1861), 167,600; (1871), 186,100; (1881), 206,000; commune, 245,000; (1893—estimated), 272,000; (1921), 400,000.

dependent or had a separate administration. At the present day its harbour is composed of two basins, the northern one being capable of admitting vessels of the largest size. Its cathedral, dedicated to St. Rosalio, dates from Norman times (1170). About that time it is described by Edrisi as the greatest metropolis of the world. Its university dates from 1805. Trapani, on the west coast, is another ancient Phoenician or Carthaginian town with an originally Greek name (Drepanon), and Marsala on the southern part of the same coast was once, under the name of Lilybœum, the principal Carthaginian fortress of Sicily, but now bears the Arabic name of "port of God" (Marsa Allah). Its ancient harbour was filled up in 1580 by Don John of Austria to prevent its being used by corsairs, and the new port admits only vessels of less than 13 feet draught. Mazzara, on the principal plain in the south-west (now highly malarious), has retained its name from Carthaginian times, and it gave name to one of the three divisions<sup>3</sup> into which the island was divided from Norman times down to 1818. Among inland towns the ancient Henna or Enna now survives as Castrogiovanni, but the most populous is Caltanissetta, a town of Saracenic origin, an elevated provincial capital near which is the Norman Abbey of San Spirito founded by King Roger in 1153.

# 34. The Lipari and other Islands

West of Sicily lie the unimportant islands of Favignana, Levanzo, and Marittimo, the Ægusæ or Ægades of

<sup>&</sup>lt;sup>1</sup> Maggiore-Perni, La Popolazione di Sicilia, etc., p. 57.

<sup>&</sup>lt;sup>2</sup> Pop. (1861), 26,300; (1881), 33,000; (1921), 71,000.

<sup>&</sup>lt;sup>3</sup> Val Demone, Val di Noto, and Val di Mazzara.

<sup>&</sup>lt;sup>4</sup> Pop. (1861), 20,400; (1881), 25,000; (1921), 60,000.

the ancients, while north of Sicily, at a distance of from 10 to 40 miles off the coast, is the group of the Lipari islands, the *Æolia* or *Vulcania* of the ancients. The Liparis are all of volcanic origin, and consist of seven islands, with a few unimportant islets. Lipari, the chief island, is about 5 miles in length and 4 in breadth, consisting wholly of lava and scoriæ, and yielding large quantities of pumice-stone. Stromboli, with a cone rising to 3090 feet, has been from remote periods in a state of rhythmical eruption, ejecting at intervals of a few minutes clouds of steam illuminated by reflection from the glowing lava in the throat of the volcano. Vulcano, the most southerly of the archipelago, is connected with Milazzo in Sicily by a telegraph cable, which has on several occasions been ruptured at a short distance from the island contemporaneously with volcanic eruptions occurring there.2 The other islands of the group are Panaria, Salina, Filicudi, and Alicudi.

# 35. Sardinia

Sardinia, in Italian Sardegna, is separated from Corsica by a strait only  $7\frac{1}{2}$  miles wide and no more than 50 fathoms deep at the deepest part. These circumstances, together with the numerous peninsular cliffs on both sides, the intervening small islands, the similarity of geological structure (granite and Tertiary limestones) on both sides, as well as of flora and fauna, all point unmistakably to the union of the two islands at a recent geological date. When compared with Sicily, the other

<sup>&</sup>lt;sup>1</sup> For descriptions of these volcanic islands see Prof. Judd's papers in *The Geological Magazine* for 1875, and his volume on *Volcanoes*, 1881.

<sup>&</sup>lt;sup>2</sup> See Atti Accad. Gioenia, 1894, pp. 2-3; Geog. Jour. vol. x. p. 271.

great island of Italy, Sardinia presents a great contrast in respect of productiveness and population. Less than one-thirteenth smaller than Sicily, it has less than onefourth of the population of the latter island, 1 so that while Sicily is one of the most populous parts of the Italian kingdom, Sardinia is one of the most sparsely peopled territories of the Mediterranean. Nine-tenths of the area is mountainous, the mountains, composed mainly of ancient crystalline rocks such as granite, gneiss, and clay-slate, being confusedly scattered over the surface. The highest summit is Gennargentu (6365 feet), towards the middle of the island. The principal plain is the Campidano, stretching with a mean width of 10 miles from the east of Cagliari on the south coast north-westwards for 60 miles to the gulf of Oristano, in the middle of the west coast. In ancient times this plain was renowned for its fertility, making Sardinia one of the granaries of Rome. Even then, however, the island was no less notorious for its unhealthiness, and the returns of the crops give no indication of the ancient productiveness. The mountains deprive the valleys and plains of the beneficial effects of the north winds. and even in summer dense mists hang stagnating over the marshes and lagoons. In the mining district in the south-west the works are at a standstill from the middle of June to the end of October. Amelioration works are, however, in progress. More than 7000 acres have been drained in the middle of the Campidano round Sanluri. Agriculture is backward. Wheat, the principal product, yields only about ten or eleven bushels per acre: in the southern half of the island, which contains most of the wheat area, less. Next to wheat the vine and the

<sup>&</sup>lt;sup>1</sup> Area, 9205 sq. m.; pop. (end 1861), 588,000; (1871), 637,000; (1881), 682,000; (1891—estimated), 730,000; (1921), 867,000.

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olive cover the greatest area, the former culture having greatly increased in recent years. The animals of Sardinia, both wild and tame, are all smaller than those on the mainland. Among the wild animals is the moufflon or wild sheep, which Sardinia shares with Corsica, and which is generally regarded as the progenitor of the domesticated animal. The varied mineral wealth of Sardinia is mainly found in the southern half of the island (south of  $39\frac{1}{3}$ °). The principal mining district is that in the south-west, already referred to, round Iglesias, where the ores are believed to have been worked even by the Phœnicians, as they were afterwards by the Carthaginians and Romans. The tunny, anchovy and coral fisheries are important. Of the relics of antiquity in this island the most remarkable are the round towers known as nuraghi, possibly erected by the earliest inhabitants. They are built of unhewn stone, without lime or cement, in the shape of a cone, attain a height of as much as 65 feet and a diameter of about 100 feet. They are of one or more stories and contain one or more chambers. Many of them have been destroyed, but 2000 of them were counted by Giov. Spano 1 still uninjured. The ancient invaders of Sardinia generally approached from Africa, the side towards which the most accessible roadstead, that of the bay of Cagliari, is directed. Here Phænicians landed at an early date, and here the Carthaginians afterwards established themselves, making Cagliari<sup>2</sup> (Caralis) the capital of the island. The island remained in the possession of the Carthaginians till the close of the third Punic war, when it fell into the hands of the Romans. On the break-up of the Roman Empire it was successively invaded by Goths, Vandals and Moors. At the end of

Memoriu sopra i nuraghi di Sardegna, ed. Cagliari, 1867.
 (Cagliari), pop. (1861), 28,200; (1881), 38,600; (1921), 62,000.

the eleventh century it was subjected by the Pisans, a century later it fell into the hands of the Genoese, and from the end of the thirteenth century (1297) down to 1713 it belonged to the kings of Aragon and their successors. It came into the possession of the house of Savoy only in 1720 in exchange for Sicily, and it now forms two provinces of the kingdom of Italy (Cagliari in the south and Sassari in the north).

## 36. Fiume

Like Trieste, Pola, Zara, and other harbours on the east Adriatic coast, Fiume <sup>1</sup> is an outpost of Italy, an island of Italians in a sea of Slavs. The port was a creation of the Hungarian Government as the outport of Buda Pest on the south sea; it was a rival of Trieste, and its progress was artificial, being due to administrative measures.

Since the Great War it has been a difficult problem. By the Treaty of Rapallo, 1920, Fiume was made a free city with direct land connection with Italy west of Lenci and including the railway line to Trieste. The free city of Fiume was an anomaly, for across the Recina, a shallow stream of little use as a physical dividing line, lies Sušak, which is a Slav suburb of the town and which was not included in the free city. In 1924, by agreement, Fiume became Italian.

<sup>&</sup>lt;sup>1</sup> (Fiume), pop. (1921), 50,000.

# CHAPTER III

### IBERIA

## 1. Contour-General Features

Under the title of the Iberian Peninsula is comprised the extreme south-west corner of Europe, which is sharply separated from the rest of the mainland by the mountain-wall of the Pyrenees, whence it is known also as the Pyrenean Peninsula. In point of area it ranks second among the European peninsulas, being exceeded only by Scandinavia.

Two states of very unequal extent jointly occupy its surface, Spain taking about five-sixths of the whole, while the remainder forms the kingdom of Portugal. Notwithstanding this political division, it is desirable to study the physical features of the peninsula as a whole, since there is no geographical necessity that can justify a separation.

To form a correct idea of the conformation of this region, it should be regarded as an isolated continental mass of land, or a primeval table-land, surrounded on nearly all sides by the sea, and fenced on the north and on the south by lofty elevations of a much younger age, being separated from each by a broad and shallow depression. If the sea were to rise permanently 2000 feet, the

central plateau would be connected with the Pyrenees on the north, and with the Sierra Nevada on the south, by narrow isthmuses only. The peninsula rises steeply out of the depths of the sea, and stands on a sub-oceanic platform whose edge is only 30 miles distant from the north and west coasts. A narrow terrace—that is to say, a chain of low coast-plains—girdles it round, except on the north-east and the north-west. Despite this, the coasts are, generally speaking, difficult of access, there being a marked deficiency of bays, and an almost total absence of islands. Apart from the fiord-like indentations of the extreme north-west (Galicia), the estuary of the Tagus, the Bay of Setubal, the Gulf of Cadiz, the Bay of Algeciras immediately west of Gibraltar, and the harbour of Cartagena in the south-east corner, the only accommodation for shipping consists of small harbours, for the most part ill-protected.

Nor are the internal waterways any more serviceable for purposes of navigation. With respect to its general contour, the great central plateau, which covers considerably more than one-half of the entire area of the peninsula, bears a striking resemblance to the continent of Africa—that is to say, its surface is a nearly level plain, overtopped by higher ridges all round its borders. Owing to this configuration and to the character of its geological structure, the rivers which rise on the tableland have cut for themselves deep, narrow trenches, and fling themselves down into the lowlands of the coast

<sup>&</sup>lt;sup>1</sup> Though fiord-like, these inlets, locally known as *rias*, are distinguished from fiords, as above described (p. 26), by the short distance that they run inland, by their gradually widening towards the mouth, and more especially by their being generally of no great depth, and having their greatest depth at the mouth. They are the submerged land-valleys of small river-basins in which submergence outruns deposition. See Penck, *Morphol. der Erdoberfläche*, ii. pp. 566, 567, 578.

# THE IBERIAN PENINSULA



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through rapids and wild, steep gorges. It has been said of the Spanish rivers, that they possess "a long name, a narrow channel, and very little water;" and the observation is quite true of nearly all those rivers which follow the general slope of the peninsula, namely, from north-east to south-west; with the one exception of the Guadalquivir, whose basin coincides practically with the depression which separates the plateau on the one side from the Sierra Nevada and its collateral chains in Andalusia on the other. It is also equally true of the short torrents which plunge down the eastern face of the plateau. And short they all are, except only the Ebro, which traverses the other great depression, between the plateau and the Pyrenees; for in the province of Valencia the marginal ranges of the table-land approach to within 25 miles of the Mediterranean.

Thus Spain—Portugal drops largely out of account in this connection—is emphatically a land of sharp and striking contrasts. In general average altitude the highest country in Europe, it has few typical mountaineers; a land whose densest populations are clustered in the low plains along its coasts, it has very few seamen and comparatively little mercantile marine. interior—that is to say, the great central plateau presents a monotonous, uniform, tolerably level expanse, yielding few natural products, either crops or minerals, possessing but little water, with many wide waste places, a cold winter, a scorching summer, and a dull monotony of colouring, though as a rule the roads are good. The coast districts, on the other hand, differ vastly, not only from this cheerless interior, but also from one another. On the north and north-west a moist, humid region, smothered in greenery, and the scene of active coal and iron mining. In the north-east a dense concentration

of people who in language, manners, and temperament have greater affinity with the Provençal of France than with the grave, proud Castilian of the table-land, and who expend their energy and enterprise in eager manufacturing industry. On the east and south a great diversity of vegetable products, a marvellously fertile soil wherever fed with the waters of irrigation, and in the south a gay and careless race, loving pleasure more than work. "If in summer you were to cross the peninsula from the Bay of Biscay to the south coast of Andalusia, you would climb up to the table-land from a region where everything rusts and moulds from dampness, ascending through fields of maize, through vineyards, through orchards of apples and pears, through groves of chestnuts, forests of oaks and beeches, past green meadows and brawling mountain-streams. Up on the table-land all is aridity and fierce sun-heat, with no sign of life anywhere. What little vegetation there is, is smothered with dust: dust chokes the roads, the houses: dust fills the air, dims the brightness of the sun. Wide treeless plains separated from one another by bare, stony mountains. But the table-land crossed, and the blue waters of the Mediterranean seen sparkling in the distance, you enter a land where the mountain-brooks conjure forth groves and gardens of lovely fruit, where the golden orange gleams amongst its dark green leaves. and the date-palm lifts its noble crown of foliage high above the Moorish-looking town, and close down by the sea fields of sugar-cane wave gently in the breeze." i

<sup>&</sup>lt;sup>1</sup> Dr. Theobald Fischer, Länderkunde der drei Südeuropäischen Halbinseln, p. 525, Wien u. Prag. 1893.

# 2. Geology

Although the Pyrenees on the north are separated from the great central plateau by the basin of the Ebro, and the Andalusian Mountains (Sierra Nevada, etc.) are separated from it on the south by the basin of the Guadalquivir, and although both were upheaved at a very much later geological epoch, the general structure of all three systems is, nevertheless, in many respects similar. Almost every geological period, from the Archæan to the Quaternary, is represented in the peninsula; the only exceptions being certain of the more recent rocks of the Palæozoic division. The base of the great mountain masses and of the plateau consists of Archæan and Cambrian and Silurian rocks, broken through by vast upheavals of granite. This last, which covers 9 per cent of the total area of the peninsula, is especially prominent in the Pyrenees, in the Asturias and northern Portugal, in the great mountain ranges which cross the plateau from north-north-east to southsouth-west (the Sierra de Gredos and the Sierra de Guadarrama), and in the Sierra Nevada. Cambrian and Silurian formations crop out over 23 per cent of the surface, occurring more particularly in the Asturias and Galicia, on the west side of the plateau, in Andalusia, in South Portugal, and on the flanks of the Pyrenees in Aragon and Catalonia. Banked up against these older rocks, especially along the margins of the table-land, and on the slope of the Pyrenees, lie in tolerably regular order and sequence more or less thick strata of Triassic, Jurassic, and Cretaceous rocks. The Cretaceous and Triassic predominate on the Pyrenean slopes and along the north-east and east flanks of the plateau, generally worn into bare, rugged outlines. Tertiary deposits cover  $34\frac{1}{2}$  per cent of the surface. They belong to the Eocene, and in an even yet greater measure to the Miocene era, and have been laid down sometimes directly upon the Archæan, sometimes upon the Silurian, sometimes upon the Cretaceous, Jurassic, or Triassic. On both sides of the Ebro basin, in the valleys of the Guadalaviar and the Jucar (both in Valencia), Eocene deposits predominate. The Miocene fill the greater portion of the vast inland lakes which at that epoch occupied the floor of what is now the great central plateau, and also crop out extensively in the Ebro valley, in New Castile, and in southern Portugal. Lastly come Quaternary deposits, overlying some 10 per cent of the total area of the peninsula. The regions in which they are found in greatest abundance are both sides of the Sierra de Guadarrama, on the south foot of the Sierra de Gata (parting Old from New Castile), and in the lower parts of the Ebro and the Guadalquivir valleys. Carboniferous deposits occur in largest quantity and thickness in the Asturias and on the south side of the Cantabrian Mountains (i.e. in Leon). As a rule the mountains along the eastern and southern borders of the table-land do not form welldefined ranges, but are huddled together in crumpled confusion, and exhibit remarkable evidences of the powerful agency of erosion, denudation, lateral pressure. dislocation. Lateral pressure of a tremendous character has been exerted at a comparatively recent age along the south and south-east margins of the plateau. There, the Sierra Nevada and other ranges, which do stand out as clearly defined chains, have been pressed up against the strongly resisting central mass, and as a consequence the more friable edges of the latter are extraordinarily

crushed and tilted up at sharp angles. Both the Sierra Morena, on the southern edge of the plateau, and the mountain ranges of Andalusia present their steeper sides towards the Mediterranean, the direction from which the pressure came. Andalusia, it may be added, possesses many geological affinities with the north of Morocco; and, indeed, the Straits of Gibraltar, which separate the two, are said to be of quite recent (i.e. Quaternary) origin. All this southern region of the peninsula is subject to earthquakes. The most disastrous of recent times have been the earthquake of Lisbon (1755), that of Valencia (1829), and that of Alhama or Malaga (1884).

The geological history of the peninsula is somewhat obscure. The core of the land, the Meseta, nowadays an elevated table-land, bears some relation to the block mountains of the Armorican system, of which the nearest neighbour is the Central Massif of France.

The southern mountains, the Sierra Nevada, sometimes referred to under the title Betic Cordillera, belong to the Alpine system of young mountains which, as the Apennines, Atlas, and Sierra Nevada, almost encircles the basin of the western Mediterranean, due to the submergence of an area similar to the Meseta.

The Strait of Gibraltar, like the Strait of Dover, is relatively a modern cut between two areas of deep water. The Betic Cordillera upfolded by a strain from the south against the Meseta is separated from it by the customary complementary trough, occupied in this instance by the Tertiary plain of Andalusia and drained by the Guadalquivir. The Balearic Islands are a continuation of this fold system.

In the north the fold mountains, Cantabrians and Pyrenees, though younger than the Meseta, are said to be older than the Alps, and present an upfold of Alpine character and magnitude whose origin is not precisely determined. The Tertiary plain of Aragon, the basin of the Ebro, is a trough similar to Andalusia, yet north of the uplift between the Pyrenees and the Central Massif of France the trough of the Garonne and the Gate of Toulouse is more definite. The Meseta presents a scarped face to each of the complementary troughs, and also the coast north of Valencia. The Cantabrian Mountains, and, to a less degree, the Betic Cordillera, rise somewhat sheer from ocean deeps, so that the coast line is merely an accidental mark along a steep slope.

The physical causes for a political boundary in the west are distinctly related to the rivers which have so deeply etched the Meseta.

In three places where the river floor is at a level of about 1000, i.e. some 1500 feet or more below the general level of the Spanish portion of the Meseta, the frontier follows the river, but this is not all. The valley ways of the Douro, Tagus, and middle Guadiana are funnels wide open to the Atlantic Ocean, whence come rain and moist winds to clothe the valley slopes with a mantle of verdure, so that the passage of the frontier coincides as a rule with a change of landscape, the pleasant green valleys being exchanged for the arid browns of the semi-desert of the uplands.

The north-south section of the frontier is of climatic importance. During the summer it is the line followed by (corrected) isotherms, and separates a cooler Portugal from a torrid Spain, and it roughly separates a wet Portugal, with at least 30 inches of rain annually and maximum rain in November-December, from an arid Spain, with its largest rainfall in May in the central area most distant from the sea.

### 3. Minerals

So far as the possession and the variety of mineral treasures go, Spain is one of the richest countries in The ores occur for the most part in the regions of greatest geological disturbance—that is, along the borders and at the foot of the central table-land. There are distinct evidences, as will be seen later, of the usual sequence of minerals along the edges of great intrusions of molten earth matter into areas of anciently established archean and primary rocks. But it is only in districts close to the sea and in the basin of the Guadalquivir that the ores are mined for commerce. Many extensive deposits lie untouched, the want of fuel and the absence of roads preventing them from being worked at a profit. Apart from that, however, the mind of the Spaniard does not readily turn to mining. It requires enterprise and labour to extract minerals out of the bowels of the earth. The mines of Spain have been worked by foreigners perhaps more than by her native inhabitants. The ancient Phœnicians, and after them the Romans and the Moors, were all active miners in Spain, as we know from their historians, and from the numerous old workings in different parts of the east and the south. It was not until the nineteenth century that mining began to revive from the neglect into which it fell after the expulsion of the Moors and the improvident importation of the precious metals after the intoxicating conquests in the New World. Even now the principal pioneers of modern methods of mining in the peninsula are Englishmen, Frenchmen, and Germans. Nevertheless, minerals rank next after agriculture amongst the natural products of Spain. Of the mineral sequence associated with freeflowing lavas, a little tin, more copper, fair quantities of zine, and much silver and lead are mined; while the sequence due to viscous lavas yields much iron and some manganese. Mercury is also mined. The most valuable mineral, however, is coal (anthracite, coal, and lignite).1 Lead occurs freest from admixture with other metals on the south slope of the Sierra Morena, around the town of Linares. Deposits of silver-lead occur on the northern face of the Sierra Morena, e.g. at Villa Gutierrez and between the Alcudia ranges, both districts lying southwest of Ciudad Real. Another region richer even than this in argentiferous lead stretches from Motril, on the south coast, to Cape de Palos, east of Cartagena, on the east coast. In addition to these places, silver of a freer character is mined at Hiendelaencina, 60 miles north-east of Madrid, and at Horcajo, 50 miles north by east of Cordoba. Copper occurs in apparently inexhaustible quantity in the form of pyrites in the province of Huelva, whence it extends into the province of Alemteio in Portugal. In Huelva, 35 miles north-west of Seville, are the celebrated mines of Rio Tinto and Tharsis, which were worked by the Phoenicians and Romans, and are still the most important producing centres at the present day. In Portugal the chief mining centre of this zone is at São Domingos, near the Spanish frontier, 32 miles south-east of Beja. Copper is also extracted in the Almeria-Murcia mineral region, and in the mines of the Alcudia valley. The Rio Tinto mines are in the hands of Englishmen. The French share with them the control of the Almeria-Murcia field. Iron is mined in both the northern and southern mineral areas. most active extraction of this metal is carried on in the

 $<sup>^1</sup>$  The value of the Spanish minerals at the mine for 1918 exceeded  $\pounds20,000,000.$ 

BILBAO HARBOUR



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Basque provinces, where Bilbao exports annually greater quantities of iron ore than any other port on the mainland of Europe. Other iron mines are worked in the Huelva and the Almeria-Murcia fields, and in the district of La Serena, lying north-west of Alcudia in New Castile. In Portugal iron is mined at Moncorvo and Quadramil in Traz-os-Montes.

The importance to Britain of these deposits of iron ore and of the investment of British capital in the mines may best be gauged from the trade statistics of the British Isles. During the decade ending 1920, Britain imported annually some 4,000,000 tons of iron ore from Spain, a quantity which was about two-thirds of the total imports, and was between a quarter and a third of the home production. In addition, on the average, about 100,000 tons of manganiferous iron ore and about 500,000 tons of pyrites were imported from Spain.

The chief coal-fields lie in the north of the country, and on the north and south faces of the Sierra Morena. The largest output is in the Asturias, around the bustling town of Oviedo. Rich deposits occur on the other side of the Cantabrian Mountains, in the province of Leon; but natural difficulties (above all the want of roads) prevent them from being worked as they ought to be. Other deposits occur and are mined in the Sierra de la Demanda, east of Burgos, and in the Guadiato valley, north-west of Cordoba, and in the Alcudia valley. Lignite occurs extensively amongst the Catalan spurs of the eastern Pyrenees, where it, as well as some coal, is extracted. At the north-western end of the Alcudia Mountains is Almaden, with the richest stock of quicksilver in the world out of America. The mines, which, during a period of one hundred and twenty years, enriched the celebrated merchant-princes of Augsburg, the Fuggers,

passed later to the Rothschilds. Of other minerals it must suffice to mention zinc, obtained at Santander and Oyarzun, near San Sebastian, and in the Almeria-Murcia field; manganese in the same field, and in Huelva; gypsum in New Castile; phosphorite in the province of Caceres, in Estremadura; rock-salt half-way between Barcelona and Andorra, in the commune of Cardona, where a hill composed of this mineral rises to the height of five hundred feet, a little to the south-west of the town of that name. Rock-salt also occurs in the province of Cuenca. In Portugal excellent bay-salt is made in the lagoons of Aveiro, Setubal, Taro, as well as at Lisbon and Figueira da Foz.

Mineral springs, principally hot, occur all round the borders of the central table-land. The common placenames, Alhama (Arabic), Baños, Caldas, Fuensanta, etc., all point to the existence of hot springs. The most frequented are at Archena, 14 miles north-north-west of Murcia. The only one on the Spanish side of the Pyrenees is at Panticosa, on the west slope of Mount Viñamala, in Aragon. Others are plentifully sprinkled through Galicia, the Basque provinces, Aragon, Catalonia, Valencia, and Andalusia. The only district of the table-land where they are at all common is Calatrava, a part of La Mancha to the north-east of the Valle de la Alcudia in New Castile.

# 4. Climate

A single glance at the rain-chart of Europe will show the great deficiency of rainfall that characterises the Iberian peninsula as a whole. The parts chiefly affected

in this way are the interior table-land and the valleys of the Ebro and the Guadalquivir. The fact is a natural consequence of the superficial configuration and situation of the country. The central plateau, shut in by higher ridges all round its borders, forms in summer an area of superheated and consequently rarefied air, while in winter the air is correspondingly cooled and condensed. The result is that, in the former season, the general direction of the winds is from the sea on all sides towards the interior, in the latter from the interior towards the sea. In summer, however, when the winds are most heavily charged with moisture, the rain is condensed chiefly on the mountains that rise up on the edges of the plateau. The Ebro valley on the north is completely shut off from all the rain-bearing winds. The valley of the Guadalquivir is open to the moistureladen breezes, but in the season when they blow the surface is so heated by the rays of the sun that the moisture is only condensed when it is forced up over the mountains on to higher levels. In winter, again, when the winds blow chiefly from the interior table-lands, the air is necessarily dry. In the west and north-west, where the table-land is less continuous, the surface being broken up into mountains and valleys, the country receives abundance of rain at all seasons of year, but especially in winter, from winds blowing in different directions from the Atlantic.

Taking Madrid as typical of the Iberian plateau, we find that this dryness of the atmosphere is strikingly shown by the average number of absolutely cloudless days in the year. Of such days there are as many as 131, as against  $22\frac{1}{2}$  at Greenwich. As on other tablelands and plains, where hot suns and clear skies prevail, the daily range of temperature is often very great. In

July and August it amounts on an average to 31° F., and even in December to 16°.

The Spanish coasts suffer much less from malaria than those of Italy. The tract at the mouth of the Guadalquivir is very unhealthy, and so too are the environs of Lake Albufera, near Valencia, where rice is cultivated; but with the exception of these parts the Spanish coast enjoys almost complete immunity from this scourge of the sister peninsula. Partly, no doubt, this is due to the drier character of the Spanish climate, but it is in a great measure one of the benefits which the modern Spaniards derive from the labours of the Moors, who, by their irrigation canals, have made the rivers useful to man, so that, where in Italy, Greece, and the Levant generally swamps provide breeding grounds for malarial mosquitoes, the vegas are spread out on the Spanish coasts as smiling, richly-watered gardens of the most luxuriant fertility. This observation is equally true of the coast-strip of southern Portugalthe province of Algarye.

# 5. The Central Plateau

This upland region, although crossed by two nearly parallel systems of mountain chains, is fairly homogeneous in character. Owing to its uniformly level surface, edged by for the most part relatively low altitudes all round, it bears no little likeness to a gigantic shallow saucer tilted slightly towards the south-west, or rather to three such saucers. In the northern half, Old Castile and Leon, together coinciding with the basin of the Douro, make one. The southern half, that is New Castile and Estremadura, are divided between the basins of the Tagus and the Guadiana. None of these rivers is navigable within the political confines of Spain.

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Navigation stops—if indeed it ascends so far—at the eastern frontiers of Portugal. Their channels are deeply eroded, narrow, and sinuous; and in addition to this, their volume of water, their lengths being taken into account, is miserably poor.

The long line of mountain chains, nearly 450 miles long, which divide the plateau into two nearly equal halves, embraces the Sierra de Guadarrama, the Sierra de Gredos, the Sierra de Gata, and (in Portugal) the Serra da Estrella. In these ranges the absolute elevations above sea-level are highest in the middle of the tableland; but the relative heights above the table-land itself are greatest in the west. In the east they are scarcely distinguishable from the general broken mountainous surface of the peninsula. There their average altitude is 4000 to 4500 feet. In the west the Serra da Estrella towers up nearly 5000 feet above the plateau. The middle ranges reach altitudes of 8730 feet in Plaza de Almanzor in the Sierra de Gredos, and 7890 feet in Plaza de Peñalara in the Sierra de Guadarrama. The descent on the north side of these ranges to the valley of the Douro (Port.; Span. Duero), which has an average elevation of 2600 feet, is very gentle. It is somewhat steeper on the south towards the valley of the Tagus (Span. Tajo; Port. Tejo), partly because this basin lies about 100 feet lower than the basin of the Douro, and partly because the deep Quaternary deposits which flank the mountains on the north have a much less extensive development on this side.

Farther to the south of these mountain ranges runs another chain, separating the basins of the Tagus and the Guadiana. It is principally composed of the Mountains of Toledo, the Sierra de Guadalupe, Sierra de Montanchez, and Serra da São Muncele (in Portugal). These ranges

are lower, their average elevation being 4000 to 4250 feet, and their highest altitude 5695 feet (Las Villuercas) in the Mountains of Toledo. Both the Tagus (500 miles long) and the Guadiana (450 miles) flow through some of the most inhospitable regions in all the peninsula. Both, owing to the deep, narrow, winding channels they have cut for themselves, are obstacles rather than aids to communication. Of the two head-streams, the Záncara and Giguela, which form the Guadiana, 80 miles south by east of Madrid, the former is now generally considered as entitled to the honour of being accounted the mother river. A third, which adds its water 25 miles farther to the west and is known as the Old Guadiana, passes through a chain of lakes, sometimes by invisible channels, then disappears underground entirely for a distance of 16 miles, emerging in a second chain of lakes, the "Eyes of the Guadiana."

Naturally all these mountain ranges are more or less hindrances to free communication. And to them must be added the mountain girdle which encircles the plateau. Of these, the Sierra Morena, hanging over the basin of the Guadalquivir, alone forms a definitive range. Although no peak reaches 3500 feet in altitude, and the entire system sinks to less than half that in the Serra de Monchique in the Portuguese province of Algarve, yet the steepness of the side turned towards the Guadalquivir gives the Sierra Morena (so named from the dark-coloured scrub and eistus with which it is in great part covered) an imposing appearance. So steep, indeed, is the slope from the plateau to the lowlands on this side that the railway through the Pass of Despeñaperros descends nearly 2000 feet in the course of only 35 miles. Besides this pass, which lies on the principal road between Madrid and the cities of Andalusia, the Sierra Morena is crossed, farther to the west, by the roads and railways

that connect Cordoba with Villanueva and the middle valley of the Guadiana, Seville with Merida and Badajoz, and both these two again with Huelva.

The mountainous regions of the eastern, north-eastern, and northern edges of the plateau consist each of irregular clusters of peaks and short broken ridges, huddled together in apparent confusion. Along the east and north-east they have a general elevation of 3000 to 5000 feet, with single eminences reaching up to nearly 8000 feet. In fact, it is along or near this edge of the plateau that the principal water-parting of the peninsula is found. The roads giving access to the plateau from the Mediterranean and the valley of the Ebro are therefore few in number. The most important are those which ascend from Murcia and Alicante, both meeting near Albacete, that from Valencia to Cuenca, and that from Valencia to Teruel, the pass in this last being 4000 feet above sea-level. The principal, and almost the only serviceable, route from Madrid to the Ebro Valley descends the valley of the Jalon, and strikes the Ebro at Saragossa (600 feet). This road crosses the Sierra Ministra at an altitude of 3900 feet.

The roads which serve as chief means of communication between Old Castile and the passes round the western end of the Pyrenees into France diverge at Burgos, and strike the coast at Santander, Bilbao, and San Sebastian. The road to the last-mentioned port pierces the Sierra de Oca over the Pass of La Brujula (3265 feet), and goes down into the upper basin of the Ebro by the wild and romantic gorge of Pancorbo.

The Cantabrian Mountains, which form the northern bulwark of the plateau, are lowest in the east, where they strike off from the head of the valley of the Ebro and attain their greatest altitudes (8745 feet in Peña Vieja, a peak of the Peñas de Europa) between Long. 4° 45′ and 6° W. In Long. 6° 45′ W. they wheel round to the south-west, shutting off the rugged region of Galicia from the rest of Spain.

The coast-line is a mere accident in the steep slope which is continuous from the bottom of the trough of the Biscayan Deep to the crest of the mountain ridge. Roads and railways, based in modern times upon the mining industry, make use of the passes Manzanal (3610 feet) and Pajares (4475 feet). The western section of the mountains is the isolated province of Galicia, which has cultural affinities with Brittany in a similar situation in North-west France.

Since the entire table-land diminishes in altitude from east to west, the passes which give access from the coast belts of Portugal are neither so steep nor of so grand a character as those which lead up to the plateau on the other three sides. The principal road and railway routes in this direction converge upon Lisbon, viz. from Caceres south of the Tagus, from Badajoz on the Guadiana, from the valley of the Tagus, and from Salamanca on the north side of the great dividing ranges of the peninsula. Another trunk railway line connects Salamanca with Oporto by way of the river Douro. From Oporto another important line of railway runs north alongside the coast, till it strikes the Minho, the longest stream of Galicia, but not navigable, owing to the deep, winding gorges through which it runs.

The basin of the Douro being separated from the basin of the Tagus by the lofty dividing ranges, communication between the two is not altogether easy. The passes are therefore at a relatively great height. The most important routes, diverging from Madrid, are the road to Burgos, which crosses the Sierra de Guadarrama

by the Pass of Somosierra at 4690 feet, two roads to Segovia, and thence to Valladolid (the capital of Old Castile), over the Puerto de Navacerrada (5835 feet), and the Puerto de Guadarrama (4355 feet), 2220 feet above



THE ESCORIAL.

the level of Madrid. This same range is pierced by two railways, one penetrating the mountains near the pass last named, the other going up past that stupendous monument of proud and gloomy fanaticism, Philip II.'s palace and monastery of the Escorial, and climbing over the range at an altitude of 4275 feet. Avila, the

town into which this railway runs on the Old Castilian side, is connected by road with Talavera de la Reina on the Tagus by the Puerto del Pico (4435 feet) in the Sierra de Gredos. Somewhat farther down the river the principal road running from north to south inside the Spanish frontier winds between the west and east extremities of the Sierra de Gredos and the Sierra de Gata, over the Puerto (Pass) de Baños (3075 feet). This road and a railway join Huelva, Merida, Caceres, Salamanca, Zamora, Leon, Oviedo, and Gijon.

The second system of mountains—namely, those which separate the valleys of the Guadiana and the Tagus—are crossed at several places and at much lower elevations. The Pass of Lapiche on the great highroad from Madrid to Andalusia is only 2215 feet in altitude. Nevertheless, travelling is not easy in New Castile, owing to the barren and uninhabited character of the country.

Large areas are occupied only by a continuous covering of esparto grass; but in the east and south-east, where the drought is even greater than in the western parts of the plateau, there are vast tracts forming true steppes, like those of southern Russia, with no continuous vegetation of any kind. In these the soil is largely impregnated with salts derived from the gypsum which forms a large proportion of the underlying rocks, and hence almost the only vegetation to be seen consists of halophytes, or plants suited to a saline soil, mostly of a pale green colour, and only sparsely scattered over the land.

The southern parts of New Castile, especially La Mancha (also true of Murcia and Andalusia), are characterised in summer and early autumn by a dry haze known as *calina*. It is composed of the finest dust, and when at its height (generally in August), is so dense that the sun shines through it only as a reddish disc shorn

of its rays and glare, while the whole of the landscape is enveloped as it were by a dull gray cloak, which obscures objects from the sight until the observer comes close up to them.

Although now such bare and arid wildernesses, these upland basins were not always the treeless, sun-scorched, wind-swept desolate wastes which they so pronouncedly are to-day. Even as late as the fourteenth century they were well planted with trees. A few scattered patches of oak and pine still remain to attest the fact. The forests have disappeared almost entirely as a consequence of the greed, apathy, and improvidence of the Spaniards. So scarce is timber at the present time that in several parts straw and dried dung are almost the only fuel that can be got for domestic use.

Except in the neighbourhood of water, the vegetation consists principally of sad-coloured evergreens, of low growth, scanty foliage, leathery stems, and spiny or prickly nature, such as the rock-rose (Cistus), lavender, thyme, rosemary, and other labiates, gigantic thistles, broom, and different varieties of heather-plants. These afford a scanty pasturage to vast numbers of sheep and goats. The sheep, in flocks of 10,000 together, guarded by half a hundred shepherds and as many dogs, wander all the summer long up and down the Castiles and Estremadura. The animals are of the famous merino breed, but now, alas! sadly degenerate. Considerable herds of swine are also fed in Estremadura, and amongst the valleys of the Sierra Morena.

The people of the table-land live for the most part in large rural villages, like those of the Hungarian pusstas, often at great distances apart, and frequently separated by wide uncultivated wastes. The only signs of human existence are, it may be, the quaint water-wheels in the

valleys, the windmills which crown the low hills of La Mancha, the home-country of the immortal Don Quixote, or the gray slowly-rising dust-clouds which mark the passage of the mule caravans.

And yet the soil of these regions is not naturally barren, except those saline depressions of the ancient Miocene lakes which have resisted longest the process of desiccation. Almost everywhere else wheat would grow, if the people only brought to the cultivation of it the necessary amount of enterprise and energy. When the



MONGOOSE.

Romans were masters of the peninsula (beginning of the second century B.C. to the middle of the third century A.D.), these regions, more especially Old Castile and Estremadura, were reckoned amongst the "granaries" of the world. Even to-day, in spite of the deplorable condition to which agriculture sank in Spain, considerable quantities of wheat and barley are grown. The people, wedded unshakenly to ancient traditions, apathetic, indifferent, practise methods of tillage as antiquated as perhaps any in Europe. They plough with rudely made wooden ploughs drawn by oxen, reap their corn with sickles, thresh it with horses, and winnow it in the wind.

Irrigation, at least on the plateau, is not used to anything like the extent it might be. Roots are not grown. Manuring is unknown. There is no rotation of crops. But wherever water does exist, there are found fields of wheat, vineyards, and olive groves, and, less extensively, barley (for fodder), chick-peas (the staple food of the people), rye, beans, lentils, flax, and hemp. The useful esparto grass grows plentifully on the otherwise barren hills of the south-east and south borders of the plateau.



PYRENEAN IBEX.

Goats, mules, and asses are the domestic animals commonly kept. The mules of Aragon are famous for their size and shape. The most characteristic of the wild animals are the wolf, lynx, fox, genet, wild cat, wild boar (in Estremadura and the Cantabrian Mountains), badger, mongoose, ibex, and deer; whilst the mountain regions are the haunt of eagles, vultures, buzzard, raven, chough, ring-ousel, redstart, wheatear, larks, chats, pipit, golden oriole, jay, stone curlew, cuckoo, quail, golden plover, and many other birds.

## 6. The Pyrenees

The Pyrenees on the northern frontier not only form the grandest range in Spain, stretching for a distance of about 270 miles from the Mediterranean to the Bay of Biscav with a breadth of 25 to 90 miles; but they must be ranked next to the Alps among the mountain systems of Europe—the Caucasus being assigned to Asia. As a barrier between north and south the Pyrenees are even more effective than the Alps. The chain is, in fact, a true sierra, or saw-like ridge, gapped by slight notches not much below the level of the neighbouring peaks. Throughout its whole length between the low coast-strips at the extremities, on which the railways run between France and Spain, there are only three passes practicable for carriages—the Col de la Perche (5280 feet), between the valley of the Tet (Perpignan) and that of the Segre (Lerida); the Col de Somport or Canfranc (5355 feet), a little to the west of the Pic du Midi on the old Roman road from Saragossa to the valley of the Oloron; and, near the Mediterranean end of the eastern Pyrenees, the Pass of La Perthus (950 feet), used by Hannibal in 218 B.C., connecting Figueras and Perpignan. The railway between these two towns skirts the seashore. To make the barrier even more complete than it is by nature, the dread of hostile aggression, outweighing the consideration of obvious commercial advantages, has dictated the creation of a break of gauge between the French and Spanish railway systems at both ends of the range.

At the western extremity of the chain there are three important passes—the historic gorge of Roncesvalles, (3960 feet), consecrated to the glory of Charlemagne's paladin Roland, and connecting Spanish with French Navarre; the Pass of Betale (2850 feet), carrying the

road from Pampeluna to Bayonne; and the Pass of Idiazabal (2160 feet), on the road between Vitoria and San Sebastian. This last should, however, perhaps be considered a pass of the Cantabrian Mountains. On this side too the railway hugs the coast very closely. Hitherto the Pyrenees have not been pierced, like the Alps, by any railway tunnel.

The eastern or Mediterranean end of the Pyrenees terminates in Cape de Creus, or more precisely, Cape Cerbera, whence the chain trends in a general direction west-north-west, until it reaches the Atlantic at Cape du Figuier, near Fuenterrabia.

In the central Pyrenees, in the language of Ritter, "the subline and lovely crown" of the whole system, our attention is riveted especially by the *cirques*, or ouelles (olla, or pot), the caldron-shaped formations which impart to the intersecting valleys their peculiarly imposing background.

The abnormal structure of the cirques has given rise to many hypotheses regarding their origin.<sup>2</sup> The smaller mountain recesses of this sort sometimes possibly, but very improbably, point to the falling in of caverns as the cause of their peculiar shape. But it is impossible to believe that this theory will account for the mighty cirques of Gavarnie, Troumouse, Bielsa, etc. So much, at least, is certain, that cirques are characteristic of all the European and other mountains where glaciers are, or where they have been in comparatively late geological times, such as the Black Forest, Switzerland, the Highlands of Scotland, Cumberland, and Wales.

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<sup>&</sup>lt;sup>1</sup> In the Highlands of Scotland such cirques are called in Gaelie coire, a caldron.

<sup>&</sup>lt;sup>2</sup> See Prof. Bonney, "On the Formation of Cirques," Quart. Journ. Geol. Soc., vol. xxvii. p. 312 (1871).

THE CIRQUE DE GAVARNIE.

Near Marboré ("marble"), about the middle of the chain, the difficult Pass of Roland's Gap opens up an extensive prospect through the wild regions of the Spanish Pyrenees away to the plains of Saragossa. Close by is Mont Perdu (11,000 feet), rising with a dazzling crown of perpetual snow. Here, too, are some of the most extraordinary valleys of the Pyrenees-Arrasas, Añiselo, and others—whose perpendicular walls tower up to altitudes of above 3000 feet. In the valley of Arrasas the cirque of Cotatuero is not inferior to that of the famous Gavarnie over on the French side. On the east slope of Mont Perdu, near the source of the Cinca, the cirque of Pineda surpasses even Cotatuero in size and majesty. A little more to the north, on the opposite side to Troumouse, the cirque of Barrosa forms an absolutely regular granitic shell (conque).

The sublime phenomena round about Mont Perdu are rivalled only by one other spot in the central Pyrenees. This lies near their eastern extremity, where the group of Maladetta, the Mont Blanc of the Pyrenees, with its many snow- and ice-bound crests, attains its loftiest elevation in the Peak of Anethou, or in French, Néthou (11,170 feet), the highest summit in the whole range. Viñamala, west of Mont Perdu, falls not far short of 11,000 feet. The highest elevation in the eastern Pyrenees is Puigmal (9545 feet), overlooking the Col de la Perche.

In marked contrast with the French side of the mountains, where there are a great number of celebrated mineral springs, the Spanish side possesses but one which attracts any large number of visitors, namely, that of Panticosa, at the western foot of Viñamala.

Although the vegetation along their southern slopes is richer than that of the Alps, the Pyrenees are far

surpassed by the former in the volume of their waters, and in the extent of their snows and glaciers, as well as in the delightful contrasts often presented between these stern features and a vigorous vegetation. The western and eastern Pyrenees advance towards each other from either coast, and are joined by a transverse ridge west of Mont Puigmal. Both chains present a continuous ridge of great and uniform regularity. In nearly every instance the spurs branch off at right angles with the regularity of the pinnæ of a fern leaf, thus forming a large number of short parallel valleys, crossed by others nearly at right angles. On both the Spanish and the French sides of the range the surface configuration is that of a succession of imposing terraces, terminating in vertical precipices.

In consequence of their regular formation the Pyrenees lack the picturesque variety so characteristic of the Alps. Moreover, they do not possess the beautiful Alpine longitudinal valleys, and also lack the charm of the Swiss lakes. Nor do the glaciers reach so far down towards the cultivated districts as is the case in the Alps. They lie for the most part parallel to the main axis of the range, and are generally long and narrow in shape, and high up near the loftiest ridge of peaks. The water system of the Pyrenees is also much less considerable, giving rise to only one important stream, the Garonne, which flows through part of France. The smaller mountain streams or gaves wind their way through narrow and precipitous gorges. There are further wanting the grand natural mountain passes elsewhere met with in Spain; for, apart from those mentioned above, there are none but footpaths, or at most bridle-paths, for mules.

At the same time, the Pyrenees enjoy advantages not possessed by any other mountain system. While

the Alps separate the Germanic and Italian climates north and south of them, the contrast of two very different regions is presented by the Pyrenees themselves, when traversed from east to west, without sensible divergence from the same parallel of latitude. On the west side, in the land of the Basques, the wooded heights recall the scenery of the central German highlands. But towards the shores of the Mediterranean the landscape assumes an African aspect. Here rise bare white limestone walls of Miocene and Cretaceous strata, overlooking cork and olive groves and vineyards, while extensive sandy plains are fringed with the strange but majestic aloe and the tamarisk with its bushy green foliage.

The Pyrenees, like the mountains of the Asturias (i.e. the western part of the Cantabrian Mountains), have in nearly all ages served as the last impregnable blockhouses of the champions of freedom. It was here, in the Asturias and in the district of Sobrarbe, the rugged country of the subsidiary chains of the Pyrenees lying immediately south of Mont Perdu, that the last unconquerable remnant of the Christians made their desperate stand against the overwhelming tide of the Moorish invasion. Again, it was these uplands of Aragon, with Navarre and the Basque provinces, which kept alive the Carlist wars of the nineteenth century. At the eastern end of the western Pyrenean chain, sunk deep in the arms of the mighty mountains, only to be approached over passes which for half the year are buried in snow, and leading an isolated, world-forgotten existence, is the little republic of Andorra, whose libertyloving sons have maintained down to this present day a large share of political independence against their powerful neighbours on the north and on the south of them.

# 7. Basque Provinces, Asturias, Galicia

These provinces, lying on the northern versant of the Cantabrian Mountains, present an almost inconceivable contrast to the arid table-land of Castile. Catching the outpour of the rain-laden winds, they wear garments of green through all the year. There are waving forests of oak, beech, birch, and ash, giving cover for the bear and the chamois, the hazel-grouse and capercailzie. There are orchards of apples and cherries, groves of chestnuts and walnuts. There are green meadows alternating with fields of maize, and rve, and potatoes, flax and hemp. There are green mountain glens, down which race the mountain streams, the breeding-waters of salmon and trout. Throughout this region, from Corunna to the Bidassoa, on the frontier of France, the face of the country is dotted with isolated farmsteads. Often the village consists of little else besides the church and the inn, the rest of the houses being scattered all over an extensive commune. The north coast, although tolerably uniform and straight, is broken by several small harbours. But towards the north-western extremity of the peninsula, and round on the west coast of Galicia, it is cut into by a great number of small, ria indentations. This wealth of natural harbours notwithstanding, the region is not fitted for the development of commerce on a large scale, chiefly because of 'the stormy character of the coasts, the violence of the surf, and the mostly narrow and difficult entrances which beset the greater part of the harbours. But though the ports are unsuited for large ocean-going vessels, there is, nevertheless, a considerable bulk of commerce carried on in smaller vessels. cargoes being tipped into the holds from skeleton jetties. For the Basque provinces are the centre of the iron-

mining of Spain, as already stated in the section on *Minerals* above. Farther to the west, in the Asturias, Oviedo is the centre of a busy coal-field of no less than 200 square miles in extent. These provinces, therefore, shut off from the rest of Spain by high mountain barriers, are the scenes of much activity, their people industrious and well-to-do.

The other province of Galicia, which also lies behind the same isolating range, has not enjoyed equal natural incentives to development. Its people—the Gallegos—are, therefore, much more backward, and poorer. They are, in fact, the helots of the peninsula. They go forth from their homes every summer into northern Portugal and various parts of Spain to help gather the summer vintages. Their home industries are principally tillage, fishing, and the breeding of cattle. This last, indeed, is carried on on an extensive scale throughout all these northern provinces.

The sardines which are cured in such quantities at Nantes in France are in great part caught by the Gallego fishermen of the *rias*. It is estimated that some 20,000 men, using 3000 boats, are engaged in this calling.

Warm mineral springs are very common in Galicia. Amongst the best known are Orense, Lugo, Caldas del Rey, and C. de Cuntis, near Pontevedra. Others occur at Oviedo and in the Basque provinces (near Mondragon).

## 8. Northern Portugal

The northern half of Portugal, as far south as the Serra da Estrella, partakes fundamentally of the structure and characteristics of the table-land in general. But, being open to the rain-bearing winds, and enjoying in other respects also the benefit of sea-breezes and other

maritime influences, it has a far less barren and inhospitable appearance than the plains of Castile and the adjacent province of Leon. Thus, whilst on the east it assimilates gradually with the interior of Spain, in its western districts (setting aside the narrow coast belt) it resembles very closely Galicia and the Asturias. The Douro courses along the bottom of a ravine 1000 to 1250 feet deep. But the stream runs through one of the richest wine-producing regions in all Europe—the district of port wine par excellence.

"The wine-district of the Alto Douro . . . is a singular region, extending some 30 miles along either bank of the river, but chiefly on the north side, in the province of Traz os Montes, and having a varying width of 5 to 10 miles. The whole vine-growing region consists of grey and arid-looking mountain-sides, divided by deep gullies and ravines, and all so steep that their soil of friable mica-schist, more like bits of broken slate than fertile earth, can only be cultivated by means of terraces built up tier above tier. Mountain after mountain has its sides thus scored with terraced lines like Cyclopean staircases. . . . Here and there a gleaming white casa (house), with its grove of orange and cypress trees, or a water-mill shaded by oaks and chestnuts, breaks the monotony of the landscape. Below, the yellow Douro courses swiftly, bearing picturesque boats, high-prowed and long-hulled, impelled by a white cloud of sail, and steered by a huge oar worked from a pivot in the stern-post, while far above the zone of vineyards rise mountain-peaks in jagged outline. Grapes are growing by the wayside, hanging from every crag or tree to which a vine can attach its tendrils, and, perhaps most picturesque of all, from the trellises. These trellises roof in the courtyard of cottage or farm, and

even span the village street. As one rides through the hamlets which nestle in the valleys of the Douro, the heavy purple clusters, six or eight pounds in weight, hang temptingly just overhead." 1

This industry is carried on by a thriving peasantry, whose food is the same as that of the people of Galicia—maize. In methods of agriculture this is the most advanced part of Portugal. Early potatoes are being grown more and more extensively; and the breeding of silkworms is a growing industry. Cork bark is exported to a very considerable value. Cattle, bought in Spain, are grazed and fattened for the English market. Oporto, the second city of the kingdom, standing near the mouth of the Douro, is the centre of active woollen and cotton and other manufactures.

## 9. Catalonia

This province occupies the extreme north-east corner of the peninsula. It is a mountainous region, being built up of the outlying spurs of the eastern Pyrenees, which are disposed generally parallel to the coast—that is, from north-east to south-west. The loftiest of them, the Sierra de Montseny, reaches an altitude of 5575 feet. But the most picturesque is the jagged, conical Montserrat (4060 feet), rising on the right bank of the river Llobregat, the longest stream in Catalonia, and crowned by an ancient Benedictine monastery, which possesses an image of the Virgin, an object of pilgrimage to thousands of devout Roman Catholics in the year. At the foot of this eminence, and stretching away from it on the one hand almost to the frontier of France, and on the other to the plain of Tarragona, is a shallow

<sup>&</sup>lt;sup>1</sup> A. Chapman and W. J. Buck, Wild Spain, p. 331 (1893).

trough (800 feet) of remarkably fertile soil, where nearly all the fruits of the Mediterranean region, and much good wine, are grown to perfection. (These will be more fully alluded to under the section headed *Valencia* and Murcia.) Agriculture is not, however, the most prominent industry of Catalonia.

The inhabitants of this province are among the most varied in origin in the whole country. In remote centuries Phœnician, Carthaginian, and Greek colonies contributed to the peopling of the littoral, while Iberian tribes occupied the interior; but the present province and its inhabitants derive their names from invaders of the fifth century—first the Alani, who early in that century joined the Vandals in disturbing the long repose which Spain had enjoyed under Roman rule,1 and afterwards the western Goths. Hence arose the name of Gothalania or Gotholunia, from which the modern Catalonia, in Spanish Cataluña, is formed. At the present day the Catalonians are probably the most enlightened, as they certainly are the most energetic and practical, of any in Spain. In language, in character, in their methods of tillage they have much greater affinity with the Provençals of France than with the proud but indolent Castilians of the interior table-land. They devote their energies chiefly to industry and commerce.

Barcelona, the largest and 'most important city in the province, is the second largest in the kingdom, and

<sup>1 &</sup>quot;The situation of Spain, separated on all sides from the enemies of Rome, by the sea, by the mountains, and by intermediate provinces, had secured the long tranquillity of that remote and sequestered country; and we may observe, as a sure symptom of domestic happiness, that in a period of four hundred years Spain furnished very few materials to the history of the Roman Empire."—Decline and Fall of the Roman Empire, ch. xxxi.

the province of the same name is the most densely peopled in all Spain, having above 400 inhabitants to the square mile.

#### 10. The Basin of the Ebro

This wide depression, separating the north-east shoulder of the great plateau from the stupendous range of the Pyrenees, is the bed of an ancient Eocene and Miocene lake, partly of inland, partly of marine origin. It slopes on the whole east-south-east from the highlands of the Basque provinces towards the Mediterranean, its general elevation dropping from some 2800 feet in the north-west to 170 feet, where it is fenced off from the seashore by continuations of the coast-ranges of Catalonia. Its mean elevation lies between 800 to 500 feet. There is thus a climb of nearly 5000 feet up to the passes of the central (western) Pyrenees, and of more than 3000 feet to the pass from the valley of the Jalon which gives access to the interior table-land.

This region constitutes the middle of the old kingdom of Aragon and the southern fringe of Spanish Navarre. Aragon has been described as a land of "snow-capped mountains, with defiant rocky slopes, glaring glacier-like in the face of the summer sun. It is broad, undulating wolds, overshot with hummocks of alabaster, chalk, and sandstone, with plateaux between of shifting, arid sand. It is vast highland plains with a little poor soil and many stones. It is bleak and dreary moorlands of gritty sand, dark-stained with the juices of the casual vegetable growths which are scattered over them. It is old, dry river-beds of shingle, and rifts of silt and clay. It is the casual and uncertain streak of river, with its narrow banks of green and gold, the vine and corn-plots of the peasant slaves. It is the long, broad valley of the Ebro,

the garden of [Bishop] Pignatelli, nearly four thousand square miles in extent. . . . Aragon is hopelessly bare—not a tree of natural growth anywhere. . . . The extremes of heat and cold are known here. In summer the skies are lovely, the horizon farther off than in any land I know. The sunsets are gorgeous and soul-stirring, and the nights balmy, cool, and sweet, making it pleasant for labour or rest. In winter the cold is intense, and in these badly built and fireless houses life must be hard indeed." These concluding passages, however, refer to the more mountainous parts of the former kingdom.

The Ebro (Latin Iberus) is the longest, indeed the only really long, stream belonging to the Iberian Peninsula which enters the Mediterranean. The rivers of Catalonia—Llobregat, Ter, Tordera, etc.,—are all short; and short too are most of the rivers of Valencia and Murcia, the provinces which fill the rest of the eastern sea-board of the peninsula. But although it has a total length of 450 miles, the Ebro is of comparatively small value for navigation and communication, partly because of sandbanks, which in several places choke its channel, partly because in portions of its course it foams over rapids; moreover, its volume of water, owing to the inconsiderable fall of its lower course, is relatively small, and at the point where it threads its way through the Catalonian Mountains, its channel is extremely tortuous. Sea-going vessels cannot ascend above Tortosa (15 miles), and even that town is reached by means of an artificial canal, dug through the delta of the stream.

Owing to the rain-clouds being intercepted by the Basque highlands, the precipitation in the Ebro basin is comparatively slight. The cultivated land, what there is of it, is almost entirely dependent upon irrigation.

<sup>&</sup>lt;sup>1</sup> C. B. Luffmann, A Vagabond in Spain, pp. 101, 102, 1895.

Where irrigated, it is fertile enough to grow the staple products—vine, olive, wheat, and several kinds of fruit, such as melons, pears, plums. For a considerable stretch of its middle course, between the two chief centres of population, Saragossa and Tudela, the river is canalised along both banks for irrigation purposes—on the right bank the Imperial Canal, 60 miles long, on the left bank the Táuste Canal, 25 miles long. The people live principally in large villages in the irrigated oases.

## 11. Valencia and Murcia

There is no part of Spain, except perhaps portions of Andalusia, in which the long occupation and dominance of the Moors have resulted in such signal benefit to their successors as these two provinces along the Mediterranean. Although the greater part of their surface ranges over barren mountains, the river-valleys between are of extraordinary fertility. This is owing to two causes—the warm climate and the admirable and complete system of Moorish irrigation works. Wherever these works exist, as in the valleys of the Guadalaviar (or Turia), Jucar, Segura, Sangonera, the country is a veritable garden, producing in marvellous quantity and quick succession valuable harvests of oranges, figs, dates, almonds, raisins, olives, pomegranates, lemons, mulberries, tomatoes, melons, in addition to the more purely agricultural maize, wheat, flax, hemp, and cotton. The richness of the soil allows of two, and sometimes three crops to be grown every year on the same plot of ground. Lucerne can be mown ten or twelve times a year for six years in succession without fresh sowings. "The orange trees often have on them ripe fruit, green fruit, and the blossom for a third crop, all at the same time, and so productive and rich are they, that an acre of them will sometimes yield fruit and flowers to the value of £600 in a year." The date-palm grows and ripens its fruit. The most characteristic spot is the old Moorish town of Elche, 13 miles south-west of Alicante, which is embowered in thick groves of these trees. In the swampy parts of the narrow coast plain some sugar is grown, in addition to great quantities of rice, the staple food of the people. Disputes with regard to irrigation matters are settled by a somewhat primitive summary court, drawn from the people themselves, which meets at regular intervals in the gate of the cathedral of Valencia, and has met there for the same purpose for more than a thousand years.

But fruit-growing is not the only resource of wellbeing to the inhabitants of these provinces. There is considerable mining, chiefly in the neighbourhood of Cartagena, Alicante, Castellon, and in the valley of the Segura. (See section on Minerals above.) Salt is evaporated in the coast lagoons. Moreover, there is considerable commerce and shipping from several small ports. But Alicante, which is but little farther from Madrid than the Basque port of San Sebastian, ranks fifth amongst the seaports of Spain, whilst Valencia, through its port of El Gráo, ranks second (next after Barcelona). Cartagena is the principal naval station of Spain. Silks, velvets, cloth, and other textiles are manufactured to some extent at Valencia, Cartagena, Alcoy, and other towns. The fibre of esparto grass, which grows plentifully on the mountain-sides, is woven into various useful articles. Archena, in the valley of the Segura, 40 miles north-west of Cartagena, is the most frequented mineral spring in Spain, for this, like most other parts of

<sup>&</sup>lt;sup>1</sup> F. H. Deverell, All Round Spain, p. 24, 1884.

the borderlands of the table-land, is rich in mineral springs.

## 12. Andalusia

The two most conspicuous and characteristic physical features of this, the southernmost province of Spain, are the lofty Sierra Nevada and the basin of the Guadalquivir, which parts it from the interior table-land. The Sierra Nevada, which lies parallel to the south coast, at a distance of some 20 to 30 miles, has a closer geological affinity, in structure and composition, with the mainland of Morocco (Africa) than with the rest of Its sharp-cut outlines, standing out boldly against the clear blue sky, and its snowy summits, reaching loftier altitudes (Mulhacen or Mulahacen,1 11,420 feet; Veleta,2 11,400 feet) than any others in the peninsula, constitute a true and picturesque mountain Between them and the sea-coast, and parallel to both, are several subsidiary chains of much lower elevation -e.g. Serrania de Ronda (6295 feet), Sierra de Alhama, Almijara, Contraviesa, Gador (6850 feet), Alhamilla, all of which rise steeply from the narrow lowland ribbon which skirts the sea. Between these ranges and the royal giant which overtops them nestles the historically famous, wildly romantic region of Las Alpujarras, where the Moors or Moriscoes offered their last, tenacious resistance to the reconquering Castilians all through the fifteenth century—a strife celebrated in stirring words in the old Spanish ballads. Amongst these mountain pasture valleys, grazed by sheep and goats, the best known at the present day is probably that of Lanjaron, with its much-frequented baths. Close under the highest

From an Arabic personal name, Mulai Hassan.

2 "Watch-tower."

peak of Veleta clings, like a forsaken relic of another world, the southernmost glacier in Europe (9335 feet).

The roads between the sea-coast and this lofty mountain region, and leading beyond it to the high plains and hilly country which are built up against the northern face of the Sierra Nevada, start from Malaga and Motril. From the latter a difficult path ascends almost straight north, skirting the western extremity of the Sierra Nevada over the pass known by the romantic name of the "Moor's Sigh" (3280 feet). From Malaga various roads climb over the coast ranges; one to the valley of the Jenil, and so to Granada, over the Pass of Guadalhorce (making an ascent from 350 feet to 1050 feet in the space of 12 miles); another over the Bocca del Asno (3165 feet) to Antiquera; a third, the route followed by the railway, over a pass which is 1035 feet above sea-level.

The basin of the Guadalquivir (Arabic Wadi-el-Kebir, "the great river") fills most of the space between the Sierra Nevada and the Sierra Morena on the south edge of the great table-land. For nearly half its length of about 350 miles it presents the usual features of a mountain stream. It is only after it has passed down the rapids of Montoro that it enters the broad plain, of which the greater part of its basin consists. At Seville, 70 miles from its mouth, it becomes a tidal river, and up to that point is navigable for vessels of 3000 tons. Some 30 miles below Seville it winds its slow. majestic way through vast marshes, the Marismas, and enters the Atlantic by three arms, of which, however, only the middle one is used. This navigable portion of the river is liable to severe periodic inundations, more especially when the south-west wind drives the water back upon Seville.

Owing to its situation and great range in altitude, Andalusia is characterised by great diversity of climate, of productions, and of natural appearance. If Spain is the land of contrasts, Andalusia is an epitome of Spain. In some respects "more African than Africa, in spring, autumn, and winter it is a paradise, the huerta (garden) of Europe, low-lying and protected by the Sierras of Nevada and Morena from the deadly breath of the central plateau; but in the four summer months an inferno, where every green thing is burnt up by a fiery sun, where shade is not, and where life is only endurable by discarding European habits, and adopting those of Moorish or Oriental races. . . . Andalucia is a land of vine-clad slopes and olivares (olive-groves); of boundless prairies and corn-lands, where rude, old-world tillage leaves undisturbed the giant of European game-birds, the great bustard. . . . A land of vast, trackless heaths, aromatic of myrtle and mimosa, lentisk and palmetto, alternating with park-like, self-sown woods of cork-oak and chestnut, ilex and wild olive, carpeted between in springtime with wondrous wealth of flowers-lonely scenes rarely traversed save by the muleteer." 1

As illustrating the wealth and diversity of the vegetation in this favoured region of the peninsula, it may be mentioned that the olive grows up to 3300 feet on the north side of the Sierra Nevada, and to a thousand feet higher on its southern face. Above the limit of the olive occur the chestnut, cherry, mulberry, and walnut up to 5300 feet; whilst from this latter limit up to 8500 feet is the zone characterised by grasses, the barberry and wild-rose, juniper, labiates, broom, rye, and potatoes. The coast-strip grows such tropical products as sugar, cotton, the banana, chirimoya,

 $<sup>^{1}</sup>$  A. Chapman and W. J. Buck, Wild Spain, pp. 3, 7, 1893. VOL. I

oranges, lemons, dates, carob beans, pomegranates, and other fruits. The agave and prickly pear give life to the otherwise sun-scorched and barren areas up to an altitude of 3000 feet on the south side of the Sierra Nevada. The more fertile parts of the higher-lying districts produce the crops which have been already mentioned in treating of corresponding regions of the peninsula. The region which lies between the western extremities of the coast-ranges and the estuary of the



GENET.

Guadalquivir is one continuous vineyard, producing the far-famed sherry of Xeres or Jerez de la Frontera (Arabic *Sherish*). Another important wine-producing district has Malaga for its centre. The olive is the characteristic food-plant of the Guadalquivir basin.

The scrub of the plains of Andalusia affords shelter to the boar, lynx, wildcat, badger, genet, mongoose, and red deer, and to great numbers of birds, e.g. partridge, golden oriole, roller-bird, hoopoe, woodpecker, greyshrike, stone-curlew. Bird-life is indeed unusually conspicuous. In the mountain fastnesses breed eagles and vultures.

In the scattered pinewoods between the Guadalquivir and the Guadiana the sportsman and naturalist can see such species as the marsh-harrier, hawks, the buzzard, kite, eagles, finches, warblers, wrens, chaffs. Marismas literally swarm with wildfowl, especially during the spring migrations; amongst others that frequent these marshy tracts are flamingoes, stilts, avocets, herons, ruffs and reeves, whimbrels, cranes, grebes, spoonbills, storks. The ibex maintains a muchthreatened existence amongst the more inaccessible mountains. The African affinities of the fauna are shown in the presence of the flamingoes, a chamæleon, wild camels, and certain insects. Cattle are bred and kept in a half-wild condition on the wide plains about the mouth of the Guadalquivir. It is from these herds that most of the bulls are selected for the famous bullfights of Andalusia. Horses too graze in the same grassy plains; the breeding of these animals is one of the very few branches of rural occupation in which any real progress is made.

The eastern corner of the province lying adjacent to Murcia is rich in minerals—lead, silver, iron, manganese, copper; but owing to lack of easy communication many profitable veins are not worked. The lovely marble from the northern slopes of the Sierra de Filabres in this region is the stone that has produced such magical effects in the Albambra. These mineral treasures were worked by the Phænicians, Romans, and Moors.

In addition to the Mediterranean ports of Malaga and Motril, this province possesses the magnificent harbour-basin of Cadiz and the ports of Huelva and San Lucar. All these are on the Atlantic coast. Huelva is the port for the rich copper mines of the Rio Tinto and Tharsis region. Seville, although not on the sea-coast,

must not be neglected amongst the commercial centres of Andalusia. At the Mediterranean end of the Strait of Gibraltar is the spacious and sheltered Bay of Algeciras, commanded from the east side by the bold, rocky peninsula of Gibraltar, a stronghold of England since 1704, bristling with modern fortifications. This strong strategical base was known to the Greeks as Calpe. With the opposite (African) Cape of Ceuta it was called the Pillars of Hercules and considered to mark the western boundary of civilisation. It gets its name from Tarik (Jebel el-Tarik, i.e. hill of Tarik), from the Mohammedan general who first won footing on the peninsula. The place will always live in the annals of English military glory as the scene of General Elliott's heroic defence for thirty-nine months (June 1779 to September 1782) against the combined forces of Spain and France.

# 13. Southern Portugal

Almost in the extreme south of Portugal is the Serra de Monchique (2965 feet), the westward continuation of the Sierra Morena that terminates in Cape St. Vincent. On the south of these mountains is the little province of Algarve, which resembles the more fertile parts of Spanish Andalusia. It is a region of romantic glens with brawling streams, and owing to the natural fertility of its soil, aided by irrigation, it produces an abundance of fruits, such as oranges, figs, almonds, carob beans, olives, chestnuts, grapes. Cork-oaks are a source of income. The sea too off this province is made to yield up its riches of sardines and tunny. The fishermen of Algarve are accounted the best seamen in the kingdom.

On the north of the Serra de Monchique stretches

for many a league the cistus-covered wilderness, inhospitable, thinly inhabited, grazed only by sheep, and goats, and swine, which forms the western continuation of the Spanish table-land. These barren lands are, however, being slowly colonised by the overflowing population of the more prosperous and enterprising north of Portugal. For wine can be grown all over the kingdom. It is reputed to be made in every commune in the country save one.

The coasts of Portugal are alternately rocky and low from the mouth of the Guadiana to the mouth of the Minho. But there are no wide openings except the Bay of Setubal and the magnificent inner basin of the estuary of the Tagus. Salt is evaporated in commercial quantities on the coast of Algarve, on the shores of the Tagus estuary, at the mouth of the Sado River, which finds the sea in the Bay of Setubal, and in the shallow lagoon of Aveiro, 30 miles south of Oporto.

## 14. The Balearic Islands

From Cape de la Náo, half-way between Valencia and Alicante, a subterranean ridge stretches out into the Mediterranean in a north-east direction. Upon it at distances of 55 to 220 miles rise the four islands of Iviza or Ibiza, Formentera, Majorca (in Spanish Mallorca), and Minorca (in Spanish Menorca), together with some smaller ones. Both Iviza and Formentera are low and fertile. Formentera is said to derive its name from the Latin frumentum, "corn." Iviza has important fisheries and lead-mines. Salt is evaporated in large quantities on both islands. Majorca presents all along the north-west

<sup>&</sup>lt;sup>1</sup> 230 square miles.

<sup>&</sup>lt;sup>9</sup> 1352 square miles.

<sup>&</sup>lt;sup>2</sup> 35 square miles.

<sup>4 293</sup> square miles.

coast a range of mountains rising steeply from the sea to altitudes of 3000 feet and over. On the inland side they slope down gradually to a broad Quaternary plain, which, being well sheltered, and, possessing an even, warm climate and a fertile soil, produces an abundance of Mediterranean fruits. Coral is fished out of the adjacent sea. Salt is evaporated on shore. Pulma, the capital of the island, and of the entire group, stands at the head of a fine bay open to the south; and Alcudia, on the north, at the head of another spacious bay facing the north-east, is the second town of the island. Minorca is not so fertile as Majorca, being exposed to the north winds, which predominate for eight months in the year. It has steep coasts, and bears superficially some resemblance to Malta. Windmills are a characteristic feature of the island, as in La Mancha in New Castile. The fiord-like harbour of Port Mahon, opening on the east side, has one of the finest anchorages in the Mediterranean. For some time during the eighteenth century it was in the possession of England. The fortifications and buildings of the town still wear an English air. The islanders are capable fishermen, and emigrate freely, especially to north Africa.

# CHAPTER IV

# THE KINGDOM OF SPAIN 1

#### 1. Races

The name Spaniard denotes a variety of races, speaking different dialects and exhibiting widely divergent national or provincial characteristics. Unlike the ethnographic elements of England for instance, the constituent races of Spain have not become fused and blended into a homogeneous whole. But each national group has clung tenaciously to its peculiar racial qualities and ideals; and in consequence of this, Spain, even at the present day, is virtually a congeries of separate states held together loosely by a common administration, rather than a nation one in blood, and one in ideals and aims.

The most richly endowed of the Spanish races is the Andalusian, who as an individual is generally well satisfied with himself, his religion, and his surroundings, and this sense of content plays through his whole bearing. He

Area, 194,783 square miles (of which 4733 square miles, with a population of 845,000, belong to the Balearic and Canary Islands); pop. (1787), 10,410,000; (1857), 15,460,000; (1877), 16,634,000; (1887), 17,550,000; (1920), 21,347,335, showing at the last date a mean density of 106 per square mile. The only provinces with a density of more than 300 per square mile in 1918 were (in the order of density) Vizcaya, Barcelona, Guipuzcoa, Madrid, and Pontevedra.

is ever anxious to show himself in the most pleasing light, is obliging, courteous, considerate, converses with unrestrained elegance and fascination, equalling the Frenchman himself in gallantry towards the fair sex.

In Seville, the capital of Andalusia, the stranger is

at once struck by the gay and insouciant enjoyment of life. To sip wine in the café, to smoke cigarettes without cessation, to chatter the slang of the bull ring, or to wax excited over the exploits of the more notorious bull-fighters—such seem to be the great and most important ends of existence. Even in classic times the inhabitants of Bætica—the present Andalusia—were reputed the best dancers. In those days it was Cadiz that held the palm; to-day the supremacy in this respect is shared by the rival cities of Seville and Granada.

The other Spanish races may be judged by contrast with the Andalusians. Best known are the Castilians politically the dominant race of the peninsula. The stiff yet exacting hidalgo, the ceremonious yet indolent caballero, at once proud of his ancestry and content to drone life away in abject poverty, such is the typical "don." Like the Andalusian the Castilian has a good opinion of himself; but, while the gaiety and grace of the one render him the more amiable, the other endeavours to establish his own personal importance by a dignified and solemn bearing, and by a quick and brave defence of his honour. He it was who invented the term "grandeza," implying a quality sustained rather by an elaborate and complicated ceremoniousness than by the inner worth of the man. At the same time, the goal of his ambition is repose—inaction.

Far more tenacity and perseverance are shown by the inhabitants of the north coast—the Galicians, Asturians. and Basques. All three enjoy special repute for personal

skill, though in very different spheres. The Galician, the helot of the peninsula, undertakes all kinds of toilsome occupations—day labourer, muleteer, domestic servant, and artisan. The Asturian, on the whole, prefers household duties. The Basque, like the Castilian, too proud to wait on others, applies himself to farming and rural occupations. He is extremely trustworthy, but stubborn, and animated by a keen love of freedom, and therefore difficult to manage. The Asturian, on the contrary, is the most accommodating of Spaniards, and of tried honesty when once he identifies himself with the household. The Aragonese are reserved, suspicious, indolent—the most refractory children of the peninsula. This quality they share with the Catalonians and the Valencians. But the latter also enjoy the worst reputation in Spain for their revengeful and bloodthirsty disposition. Both the Aragonese and the Catalonians are extremely jealous of their political rights, and on frequent occasions of civil war or revolution have shown themselves hostile to the central government of Madrid.

The natives of the Balearic Islands, descended from several distinct stocks, show the greatest dislike to the Castilians, and partiality for the Valencians and Catalonians, whom they mostly resemble. Their language, like that of Catalonia, Valencia, and Provence (France), belongs to the Langue d'Oc, or southern branch of the Hispano-Gallic tongue, in mediæval times very widely diffused along the Mediterranean seaboard. It boasts of a somewhat rich literature, especially in poetry, is still carefully cultivated, and serves as the medium of intercourse even amongst the upper classes, though Castilian is the official language of the courts and general administration. The people are described as courteous, kindly, and so honest that the doors are never bolted.

The Gipsies or Gitanos play a prominent part in the social life of Andalusia. They are partly nomad, according to the inveterate habit of their race; but partly they have taken to settled dwellings, some in the suburb of Seville called Triana, others in the neighbourhood of Granada. These last dwell in caves hollowed out of the rocks of the Darro ravine.

# 2. The Basques

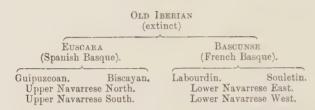
Owing to its abuse by certain recent theorists, the term "Iberian" has fallen somewhat into disrepute. Nevertheless, it is impossible to omit a slight reference to this venerable historic name, which was formerly applied to the whole of the Spanish peninsula, which survives in the geographical terms Ebro, Cant-abria, and which was formerly used to designate a primitive non-Aryan race in pre-Aryan times in possession of south-west Europe as far north as the Garonne, probably including Sardinia, Corsica, and north-west Italy (Liguria), but doubtfully north Africa. The term Basque itself is of respectable antiquity, the people having been known to the Romans as Vuscones (Pliny, 3, 3) before the new era. The same root is found in the name of the Ausci, the primitive inhabitants of Aquitania; and Aquitania itself later on again took the title of Vasconia (Gascony) when reoccupied by the Basques between 580 and 602 A.D. It still lives in the province of Vizcaya, and the Bay of Biscay, and probably forms the first part of the term Euscara, the native name of the Basque speech. Long before

<sup>&</sup>lt;sup>1</sup> In his classical work, Prüfungen der Untersuchungen über die Urbewohner Hispaniens, etc., W. von Humboldt shows that the primitive geographical nomenclature of the Peninsula is distinctly Basque. Thus the Basque words ur=water, iturria=spring, asta=rock, etc., are of frequent occurrence—always in harmony with the nature of the localities.

the advent of the Carthaginians and Romans the Iberians had become largely intermingled with the Celts, as shown by the mixed Celtiberians in the heart of the peninsula and the Gallaci (Gallicians or Gauls) in the north-west. Later on the country was successively overrun or invaded by the Sueves and Visigoths, by the Merovingian and Carlovingian Franks, by the Arabs, French, and Spaniards. Hence it is not surprising that anthropologists have had difficulty in determining a distinct type, where there is nothing but mixture of many heterogeneous elements. One variety at least has been established. A people of medium stature with heads neither long nor broad, but with an extreme breadth between the temples and pointed chins, a people allied to the early Mediterranean or Iberian race, has been developed in isolation in the central portions of the highlands; on the fringes of this area the people are mixed, and the whole population is a Basque-speaking folk. The Basque-speakers are not limited to one type, for north of the Pyrenees in France the skull seems to be relatively broader than in Spain, and this French variation is regarded as the purer form. The Basques might be almost regarded as biological freaks among the peoples of Western Europe. Their location across one of the great traffic ways of Europe is not dissimilar to the similar situation of Vlachs (Rumanians) in Macedonia and of Ruthenes (Little Russians) across the Carpathians from east Galicia.

What the Basques have preserved almost intact is the primitive Iberian language, but for which no one would have ever thought of separating them from their French and Spanish neighbours. It is in virtue of this marvellously preserved language that they are a law unto themselves, and remain a knotty problem of European ethnology.

Notwithstanding its present limited domain Basque presents a great diversity of forms, of which the chief are comprised in the subjoined table:—



None of the French or Spanish Navarrese dialects seem to have ever been reduced to writing. But the four others possess a sort of literature, the oldest printed specimen of which dates from the year 1545.1 All, however, resemble each other in their essential features, which are so peculiar that it becomes difficult to find a suitable place for Basque in any linguistic classification. It fuses the formative elements with the root to a far greater extent than the Finno-Tataric, Bantu, or any other agglutinating family of the old world; it employs composition by syncope like the polysynthetic American languages; lastly, Mahn<sup>2</sup> has shown that it is in some respects even more highly inflecting than the Aryan and Semitic groups themselves. In a morphological classification of speech Basque thus stands quite apart, being somewhat intermediate between the agglutinating, polysynthetic, and inflecting orders.

<sup>&</sup>lt;sup>1</sup> B. Dechepare's Lingua Vasconum Primitiae, Bordeaux, 1545; one copy extant.

<sup>&</sup>lt;sup>2</sup> In *Denkmäler der Baskischen Sprache*, Berlin, 1857. An admirable though now almost forgotten little treatise, betraying a deep insight into the philosophy of speech.

# 3. Chief Towns: (A) Towns on the Mediterranean and South Atlantic Seaboard

The oldest historical towns of Spain are, like those of Italy, colonies planted on the seaboard by more civilised peoples from the east, but in Spain these are mostly



CADIZ: PLAZA ISABELLA II. AND CATHEDRAL.

directly or indirectly of Phœnician origin, the growing power of Carthage having at an early date been able to exclude the Greeks from every part of the coast except the north-east. The earliest of all is  $Cadiz^1$  (the ancient Gaddir, Gades), said to have been founded by the Phœnicians in 1100 B.C. It was originally founded, like so many other commercial settlements in the neighbour-

<sup>&</sup>lt;sup>1</sup> (Cadiz), pop. (1877), 65,000; (1920), 77,000.

hood of more or less hostile populations, on a small island,<sup>1</sup> and was not connected with the mainland till late Roman times, when the severing channel was no longer required for security. Since then the town has been crowded on a long narrow peninsula between the Atlantic and its own spacious bay. Owing to the narrowness of the space on the peninsula, a number of daughter towns have grouped themselves round the shores of the bay. In Phonician and Carthaginian times Cadiz was a great centre of trade in the mineral wealth of Spain, including the copper of the lower Guadiana region, probably also the lead and silver of Linares, the tin of the now exhausted mines of Galicia, as well as iron and other minerals, and it remained a city of great wealth and very active trade so long as it was a possession of Rome. It subsequently lost a good deal of its importance; but entered upon a second period of pronounced prosperity after the discovery and settlement of the Spanish American states, and continued prosperous in spite of the English devastations in the end of the sixteenth century. The emancipation of the South American states from the yoke of Spain in the first half of the nineteenth century struck another blow at the well-being of the town; but once again she began to recover when the railways reached her. The country inland behind the bay is the home of the wellknown sherry wine. Its peculiar properties and flavour are the result in great part of the soil upon which the grapes are grown. It is to this natural circumstance that Jerez<sup>2</sup> (Xeres) de la Frontera owes its large population and its great wine-making establishments. Huelva.

<sup>&</sup>lt;sup>1</sup> Tyre and Aradus on the Phoenician coast, Utica (originally on an island) in north Africa, Ormuz, Diu, Ternate, Timor, Macao, Hong-Kong, etc.

<sup>&</sup>lt;sup>2</sup> (Jevez), pop. (1877), 64,500; (1920), 67,000.

farther to the north-west, is the shipping port for the copper mines of the Rio Tinto and a railway terminus.

Malaga <sup>1</sup> (the ancient Malucha of the Carthaginians, afterwards the Malaca of the Romans) is the principal seaport of Andalusia, and that despite its naturally indifferent harbour. It owes its significance to its position at the terminus of practicable mountain roads leading up to the interior and to the fertile oasis which stretches up the little valley behind it. It was of perhaps even more consequence under the Moorish supremacy than it is to-day as the port for the exportation of wine, fruits (dried raisins, etc.), and lead (from Linares). It has a railway to the great junction at Bobadilla.

Cartagena, said to have been founded by the Carthaginians under the direction of Hasdrubal in 225 B.C., and first named Mastia, afterwards called by the Romans Carthago nova, and Almeria—the former in a sadly desolate region, the latter wearing the look of a North African town—both owe their prosperity to the possession of good harbours and the vicinity of productive mines of lead, iron, and other minerals. Cartagena, with its fortified and well-sheltered harbour, is the headquarters of the Spanish fleet in the Mediterranean. It was one of the principal of the Carthaginian settlements in the peninsula. Alicante, Murcia, Lorca, and other towns to the south are virtually oases on, or at the terminus of, roads coming down from the Castilian tableland. Alicante is indeed the nearest port to Madrid of any on this Mediterranean coast. All three possess new

 $<sup>^{1}</sup>$  (Malaga), pop. (1877), 115,900 ; (1920), 151,000.

<sup>&</sup>lt;sup>2</sup> (Cartagena), pop. (1877), 75,900; (1920), 97,000.

<sup>&</sup>lt;sup>3</sup> (Alicante), pop. (1877), 34,900; (1920), 64,000.

<sup>&</sup>lt;sup>4</sup> (Murcia), pop. (1877), 91,800; (1920), 141,000, <sup>5</sup> (Lorca), pop. (1877), 52,900; (1920), 75,000,

and growing suburbs, and are characterised by some industrial life. All five are on the eastern railway.

Valencia¹ (the ancient Valentia Edetanorum), the third city of Spain, has supplanted the famous Hispano-Roman town of Saguntum, some 17 miles farther north along the coast. Its inhabitants owe their wealth to the marvellous garden in the midst of which it stands. Although 3 miles distant from its harbour, El Gráo, it has the second largest trade on this coast of Spain. Jativa, 35 miles south by west of Valencia, is a well-preserved specimen of a mediaval fortified town of Moorish construction. Elche, the city of date-palms, has been already mentioned. It is an important railway junction, and has a port two miles away at Santa Pola.

The coast belt of Catalonia is thickly planted with a great number of prosperous industrial towns. Most of them are small, but among them is Barcelona, standing in a sheltered position near the mouth of the Llobregat, in point of population, as well as commercial and industrial importance, the second city of Spain. Originally a Carthaginian city said to have been founded by Hamilear Barcas and to have been first called Barcino, it was afterwards made the seat of a Roman colony known as Faventia; but it was not till the Middle Ages that its great natural advantages of a fine harbour and easy communication by way of Lerida (Herda) with the Ebro valley were fully utilised. It then became the leading seaport of Spain, and acquired renown by its code of commercial law (Consulado del Mar) promulgated in It still maintains its supremacy on the Mediterranean coast of Spain, bringing to and sending from its wharves fully one-fourth of the total foreign trade of the

<sup>&</sup>lt;sup>1</sup> (Valencia), pop. (1877), 143,900; (1920), 244,000.

<sup>&</sup>lt;sup>2</sup> (Barcelona), pop. (1877), 249,100; (1920), 710,000.

country. Its many-windowed factories and tall factory chimneys present an unusual spectacle from the character of their surroundings, standing up as they do in bold relief amidst semi-tropical gardens and orchards against a mountainous background. The town has a modern



BARCELONA: THE RAMBLA.

air and is growing fast. Its industries are of various kinds, but cottons and other textiles take the first place. Water-power is being increasingly used in the factories. In ancient times Tarraco, now Tarragona, some 50 miles along the coast south-west from Barcelona, was of much more importance as a seaport than the latter town, a witness of which is still to be seen in the arches of a magnificent aqueduct. It was originally one of the few

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Greek colonies in Spain, having been founded by emigrants from Massilia (Marseilles), and in its early days and even throughout Roman times had the advantage of a good harbour; but it was destroyed by the Goths in 475, and again by the Arabs in 714, and its harbour being then allowed to silt up it fell into decay. It is now known only as a wine-shipping port, and that trade is carried on under difficulties, the present harbour, formed in 1846 at some distance from the ancient one, being without wharves and quays, so that vessels have to be loaded and discharged by means of lighters or with the aid of planks run out above the water.

Caldas de Montbuy, some 16 miles north of Barcelona, are the most frequented mineral baths in Catalonia. Gerona, on the river Ter, is the chief fortress which an invader has to deal with who comes in by the eastern passes of the Pyrenees. It has been besieged more than a score of times. Modern conditions are represented by the manufactures of woollens.

# 4. (B) Inland Towns and Towns of the Northern Seaboard

The structure of the country involving, for the most part, as above shown, the lack of inland navigation has caused the passes giving access between different parts of the plateau or between it and the lower regions round about to have had the most powerful influence in fixing the sites of the inland towns.

Madrid <sup>1</sup> has been the capital of the country since the sixteenth century, when Philip II. chose it in preference to Toledo. It was even at that time a place of some importance, owing to its position at a spot on the south side of the Sierra de Guadarrama which gave it command

<sup>&</sup>lt;sup>1</sup> (Madrid), pop. (1877), 397,700; (1920), 751,000.

of the passes which connect New Castile (and so the south of Spain) with Old Castile and France. But there can be little doubt that its central position in almost the mathematical centre of his kingdom weighed not a little in the mind of that astute, if bigoted, statesman. Then its position as the centre of radiation for the chief trunk railway lines—a position given to it during the second half of the nineteenth century—has done very much to make it what it could scarcely claim to be previous to that—namely, the real intellectual focus and administrative mistress of the entire country. The city is built on a sloping platform above the (mostly dry) bed of the little stream Manzanares. Except for parks and gardens in the west, it is surrounded by a bare and desolate country. Although the highest capital in Europe, its altitude above sea-level being 2140 feet, and in spite of the excessive heat of summer, the severe cold of winter, and the cutting winds which whistle down from the Guadarramas, Madrid has all the air of a city of life and pleasure. Since its walls were taken down in 1868, it has expanded into new suburbs on the north and northeast. The streets, which are in great part of modern construction, are wide and imposing, lined with fine buildings, and open out into gardens and promenades. "Madrid." says an observant traveller, "is Paris in miniaturethe boulevards, the style of architecture, the street crowds all reminding me of the French capital." 2 Its picture

<sup>&</sup>lt;sup>1</sup> Philip's father, Charles V., had occasionally resided in the Alcazar of the Moors, finding that the air of Madrid suited his health, but the regular seat of the court was first transferred thither in 1563. At that time the town was estimated to contain 12,000 to 14,000 inhabitants, but thirty-five years later, at the time of Philip's death, the population is estimated to have exceeded 300,000.—Prescott, History of the Reign of Philip II., London, 1861, i. pp. 356, 357.

<sup>&</sup>lt;sup>2</sup> C. B. Luffmann, A Vagabond in Spain, p. 128.

gallery, one of the finest in the world, its royal palace, national library, church of San Francisco, with exquisitely carved doors, and other public institutions, all tend to give it the character of a "world-city." But Madrid is not a manufacturing place in the usual acceptation of that term. Her commercial importance, the outcome of her central position, is more considerable.

In the neighbourhood are three or four remarkable places which owe their origin entirely to the arbitrary choice of sovereign fancy. Twenty-six miles north-west of Madrid is the vast palace and monastery of the Escorial, crowning a platform of rock (3520 feet), in the bosom of the austere and solemn Guadarramas, a fitting embodiment of the spirit which created it-Philip II. But the grim silence of the pile is now fretted by the shrill whistle of the locomotive panting up over the mountains, and by the noisy bustle of houses and chocolate-factories, which have gathered about its feet. About the same distance due south, in the midst of a green oasis beside the Tagus, is the summer residence of the Spanish court, recalling the opening lines of Schiller's Don Carlos: "The lovely days of Aranjuez are past and gone."

Toledo (ancient Toletum), the predecessor of Madrid as the seat of the sovereign, owed that proud position to its centrality as well as, in a probably greater degree, to its command of the passage of the middle Tagus. An important place even before ancient Spain succumbed to the armies of Rome, it was the capital of all Spain under the Romans and the Goths, of a separate principality under the Moors, and of Castile after the Moors were hemmed back into Andalusia. It is still the seat of the "Primate of all the Spains." On a steep rock, which is almost entirely surrounded by the river, the town occupies a position of much natural strength.



TOLEDO,

Since being supplanted by Madrid, however, it has slowly fallen into decay. Its streets and houses are huddled together one above the other. Goths, Moors, Jews, and Spaniards have each in turn contributed to its picturesque architectural ensemble. Its chief glory is the former royal palace, the Alcazar. Its population, now about 20,000, is only one-tenth of the number who dwelt within its walls in the fourteenth century. In the days of her prosperity Toledo was famous for the manufacture of silks and woollens, and richly brocaded stuffs in gold and silver thread, and for the fabrication of supple sword-blades, whose reputation was known throughout the civilised world. All this is a thing of the past, except that there is still a small-arms factory belonging to the state.

Talavera de la Reina, 40 miles lower down the river. the scene of one of Wellington's Peninsular victories over the French (1809), owes what little importance it possesses to its being at a convenient crossing over the gorge of the Tagus, at the end of a route which climbs over the Sierra de Gredos into Old Castile. Of more importance at the present day, as it was also under Roman and Moorish rule, is Badajoz,1 the capital of the province of Estremadura. It stands on the Guadiana, at the point where the river wheels round to the south, and close to the Portuguese frontier, on the chief road between Madrid and Lisbon. It has lost, however, during recent years, because the main railway between these capitals keeps to the Tagus valley. It is defended by modern fortifications, constructed subsequently to the memorable storming by Wellington's troops in 1812. Badajoz was, however, overshadowed in Roman times by its neighbour Merida (ancient Augusta Emerita), 35

<sup>&</sup>lt;sup>1</sup> (Badajoz), pop. (1877), 23,000; (1920), 38,000.

miles higher up the Tagus. This town was founded by Augustus in 25 B.C. as a frontier station for the settlement of veteran troops whose period of active campaigning was done, and became afterwards the capital of Lusitania. It commanded the route which ran northwards from Cadiz up the western side of the table-land. The river was crossed at this point by a bridge of eighty-one arches and 2575 feet in length. This still stands, as well as ruins of the Roman aqueduct, amphitheatre, Trajan's column, several temples, etc.

On this same line of north-south communication, but in Old Castile, likewise with a Roman bridge across the river (Tormes), on which it stands, is the now decayed, but still walled town of Salamanca 1 (ancient Salmantica), the seat of the most celebrated mediæval university in Spain. It has been a frequent object of contention between hostile armies from the days of Hannibal to the beginning of the nineteenth century, when Wellington defeated the French outside its walls in 1812. The northern terminus of this long ancient route was Asturica Augusta, the modern Astorga. It, too, was a frontier fortress, commanding the Pass of Manzanal, the gateway of the rugged mountainous country of Galicia into the table-land of Spain. It was the Roman capital of the Asturias, and still retains its Roman walls. Leon, about 30 miles east-north-east of Astorga, was likewise a Roman town, the seat of the Seventh Legion, whence its It is still in part surrounded by its Roman-built In the tenth century it became the capital of the second Christian kingdom that was created in the wake of the retreating Moors. There are circumstances —its proximity to the Asturian coal-field, and its choice as the point of junction for the Galician and Asturian

<sup>&</sup>lt;sup>1</sup> (Salamanca), pop. (1877), 18,000; (1920), 32,000.

railway systems—which seem to promise it a relatively more prosperous future.

Valladolid, the capital of Old Castile, and for some time after the beginning of the fifteenth century the capital of Spain, stands at the crossing-point of the chief roads, and now railways, in that division of the table-land,



AVILA.

and in almost the mathematical centre of Old Castile. It is the headquarters of the corn-trade of the northern half of the plateau. Although it has been in great part rebuilt (after fires) since the sixteenth century, it cannot be called a new or modern town in the sense that Madrid is. Here Columbus died (1506), and here Philip II. was born in 1527. Twenty-five miles south by west from Valladolid is *Medina del Campo*, a decayed town, which only deserves mention as being the point of intersection

<sup>&</sup>lt;sup>1</sup> (Valladolid), pop. (1887), 52,200; (1920), 77,000.

of several railways. For an almost similar reason Avila, still surrounded with mediaval walls and towers, and Segovia are here mentioned; they stand at the northern end of passes over the Sierra de Guadarrama. Burgos, another of the former capitals of Old Castile, owed its importance to the fact that it commanded the one approach to Spain from France by the passes over the western extremity of the Pyrenees. It occupies a situation which nature intended for a border fortress; and, owing to this circumstance, it is still a place of considerable importance. Its proximity, too, to the coal-mines of the Sierra de la Demanda has recently given a stimulus to its industrial activity—cloth and hosiery.

The towns in the border provinces of Spain, outside and off the central table-land, have owed their foundation and growth to a greater diversity of causes than the towns in the Castiles. For instance, in Galicia, Santiago de Compostela, which contains the reputed tomb of the Apostle St. James, apart from its fame as a resort for pilgrims, especially from the British Isles, during some centuries, is a place of no account. Corunna and Ferrol both derive their significance from the excellent harbours on which they stand. Corunna 2—in Spanish, Coruña the older, is the chief commercial port in this remote corner of Spain. It lives in English history as the scene of the heroic death of Sir John Moore (1809). Ferrel, which has grown up since the eighteenth century, has been selected by the Spanish Government as their principal naval station on the north and north-west coasts. Both Corunna and Ferrol owe their value to the tidescoured rias of this corner of the Peninsula. trade is limited to an exiguous hinderland.

<sup>&</sup>lt;sup>1</sup> (Burgos), pop. (1877), 29,700; (1920), 32,000.

<sup>&</sup>lt;sup>2</sup> (Corunna), pop. (1877), 33,700; (1920), 62,000.

SEGOVIA: ALCAZAR AND CATHEDRAL,

Here are docks, an arsenal, a naval academy, etc. The town and harbour are fortified on the land side, the town being built on a rocky promontory. The harbour can only be entered by one warship at a time. Altogether a strong and easily defensible place.

In the Asturias, farther to the east, the wideawake, go-ahead little town of Oviedo, the ancient Ovietum, at one time the capital of the kings of Leon, is very favourably situated in the midst of the most extensive coal-field in the entire peninsula, and there are also valuable iron-mines in the vicinity. Iron industries, including a government arsenal, are in a flourishing state of activity. Gijon, only 15 miles distant, is the port of Oviedo. In the Basque provinces Santander, Bilbao, and San Sebastian<sup>5</sup> are all shipping ports with considerable volumes of exports and imports—Santander, the principal northern port for Madrid and the Castiles in general, shipping wine, olives, and flour; Bilbao and San Sebastian, more particularly the former, being the loading places for the iron and other minerals of the Basque districts. Of these Bilbao ranks easily first; indeed, it is one of the first three seaports of all Spain, as well as a manufacturing town (metallurgical products, glass, chemicals) of thriving energy. All three ports have deep-water harbours, which can be entered without great difficulty by sea-going vessels. Both Bilbao and San Sebastian are towns of modern growth. San Sebastian was almost entirely rebuilt after its destruction by the English under Wellington in 1813. Santander (that is, its suburb Sardinero), and in an even greater measure San Sebastian.

<sup>&</sup>lt;sup>1</sup> (Oviedo), pop. (1877), 34,500; (1920), 69,000.

<sup>&</sup>lt;sup>2</sup> (Gijon), pop. (1877), 30,600; (1920), 58,000.

<sup>&</sup>lt;sup>3</sup> (Santander), pop. (1877), 41,000; (1920), 72,000.

<sup>4 (</sup>Bilbao), pop. (1877), 32,700; (1920), 113,000.

<sup>&</sup>lt;sup>5</sup> (San Sebastian), pop. (1877), 21,400; (1920), 62,000.

have grown into fashionable summer seaside resorts for the people of Madrid and other inland cities. The fortified towns of *Vitoria*<sup>1</sup> and *Pampeluna*<sup>2</sup> are, so to speak, the two watch-dogs set to keep guard over the low passes from the south-west corner of France. Both, in consequence of having suffered so severely from the vicissitudes of war, have a comparatively modern appearance. Vitoria is a thriving place. Pampeluna, the ancient Pompeiopolis, built by Pompey in 68 B.C., was the former capital of Navarre.

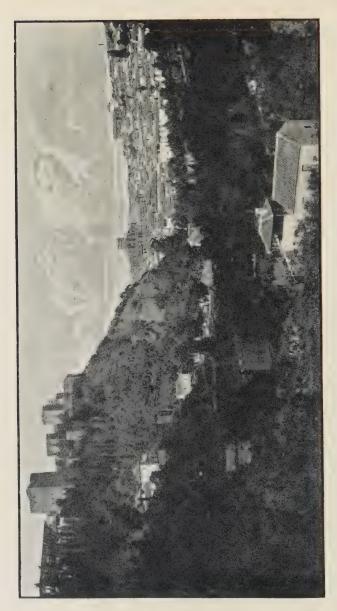
The only town of any consequence in the valley of the Ebro is Saragossa 3 in Spanish Zaragoza, the ancient Casarea Augusta. It stands at the end of the one practicable route between the Ebro basin and the highlands of Castile, and by means of its bridge, a fourteenthcentury erection, commands the passage of the river. Owing to this position, it was a place of importance even previous to the Roman conquest (first century B.C.), and continued so under the Romans, the Goths, the Moors, and the Aragonese, whose king recaptured the town (1118) after a memorable siege lasting five years. It endured two other memorable sieges from the French in 1808-1809. Saragossa is one of the chief pilgrims' resorts in Spain, the object of veneration being a pillar of jasper on which the Virgin is said to have rested when she came down from heaven.

Granada,<sup>4</sup> the pearl of the Moorish cities in Spain and the last stronghold of their power in the peninsula, was founded by the Moors in the eighth century near the ancient Celtiberian town of Illiberis, and occupies

<sup>&</sup>lt;sup>1</sup> (Vitoria), pop. (1877), 25,000; (1920), 35,000.

<sup>&</sup>lt;sup>2</sup> (Pampeluna), pop. (1877), 25,600; (1920), 32,000. <sup>3</sup> (Saragossa), pop. (1877), 84,600; (1920), 141,000.

<sup>4 (</sup>Granada), pop. (1877), 76,100; (1920), 141,000.



GRANADA: THE ALHAMBRA ON THE LEFT.

a site of singular charm. Although standing at a slightly higher altitude (2250 feet) than Madrid, it is sheltered by the Sierra Nevada and its lower spurs to such an extent that oranges easily ripen in its gardens, whilst at the same time the heat is moderated by refreshing breezes from the sea. But the romantic attractions of its site are not its only claims to considera-Strategically, it must always have been of no little importance, seeing that it stands at the intersection of the principal route between Murcia and the mouth of the Guadalquivir in the one direction, and of that between Malaga and the upper Guadalquivir basin and New Castile in the other, at a spot which gives it the easy command of the upland plains of Andalusia. Moreover. the approaches to it through its encircling girdle of mountains are all capable of tolerably easy defence. Nevertheless, Granada must be reckoned amongst the decayed cities of Spain. But it will always attract the visitor so long as that peerless masterpiece of Moorish architecture, the Alhambra, and the other memorials of Moorish and Spanish royal taste and skill, are sufficiently preserved.

Down in the plain of the Guadalquivir, Seville and Cordoba have always disputed the supremacy of queen of the valley. The latter has been perhaps most favoured by the royal grace of princes, especially Moorish, the former by its natural position at the head of the marshlands of the Guadalquivir. Cordoba¹ (the ancient Corduba) is greater in its historical memories. It was the capital of the Roman province of Bætica, the birthplace of Seneca and Lucan. Under the Moors its fame was spread throughout all Europe, as an illustrious centre of intellectual and artistic culture. Its mosque, now a

¹ (Cordoba), pop. (1877), 49,900; (1920), 77,000.

Christian church, is, perhaps, the finest piece of Mohammedan ecclesiastical architecture in Europe. There is



SEVILLE: THE HALL OF AMBASSADORS IN THE ALCAZAR.

reason to suppose the city may possibly recover from its present lethargic and decayed condition, if the mineral wealth of the Sierra Morena slopes begins to be extracted in any considerable quantity. It is also one of the

more important railway junctions south of the Castilian



A STREET IN SEVILLE AND THE GIRALDA.

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table - land. Seville 1 (the ancient Hispalis), in all ages a chief gateway into the interior of Spain, is celebrated in song and romance as the fair, gay capital of gay, lighthearted Andalusia. During the Moorish occupation it was overshadowed by Cordoba. But after the Christians recovered possession of the country, it began to flourish, not only as the headquarters of the greatest school of Spanish painters (Velasquez, Murillo), but

also as the commercial emporium of the rich trade with the

<sup>&</sup>lt;sup>1</sup> (Seville), pop. (1877), 134,000; (1920), 206,000.

Spanish conquests in America. In the eighteenth century, owing to the partial sanding up of the Guadalquivir, its shipping gradually passed to Cadiz; but in the nineteenth century, the fairway of the stream having been improved, Seville recovered her position as a commercial city. Along with this recovery of trade have gone a growth in industrial activity (tobacco, pottery, ordnance, silks, etc.) and a considerable amount of rebuilding. Seville vies with Granada in the attractions it offers to visitors, possessing the Moorish palace of the Alcazar, a marvel of lacework in stone, the Giralda (cathedral tower), the museum of paintings, and other notable buildings.

# 5. Colonies—Causes of Decay—Commerce, etc.

From what has been said in the preceding pages, it will be evident, without more words, that Spain is a country which, like the Netherlands (upon which its rapacious claw was once clasped), must look back into the past if she will sun herself in the glory of her greatest prosperity. More than a thousand years before Christ she possessed and produced sufficient natural treasures to attract the bold Phoenician to her shores. Carthaginian and Roman fought for her. Under the rule of the latter, the victor, she was one of the principal "granaries" of the world, and could boast of several large and prosperous cities. She even gave of her sons to sit on the imperial throne (Trajan, Hadrian, Theodosius the Great). She was still further enriched by the learning, the agricultural skill, the architectural taste of the enlightened Moors. Then the discovery of America led to her becoming mistress of the almost fabulous wealth of Mexico, the Spanish Main, Peru, and so made her for a time the most powerful state in Europe.

Between those long ages of glory and prosperity and her present lethargy, and indolence, and lack of enterprise what a change! what a contrast! What has brought about the deplorable alteration between those times and now? Briefly, her own successes. First, she expelled the industrious and cultured Moors, next the tradeloving Jews; then, sated with wealth too easily won, her sons—those at least who did not settle in the new countries beyond sea—gave themselves up to enjoyment and luxury, wedding indolence to their original endowment of pride. The land passed into the hands of the wealthy nobles and was flung together into vast estates (latifundia), and fell into the hands of a church that was as hungry for land as any hidalgo that ever wore glittering Toledo at his waist. In the end of the sixteenth century it is said that 3 per cent of the entire population were ecclesiastics. Then upon a people thus given over to mental and moral sloth fell the ruthless hosts of Napoleon. Finally, before the unhappy land was able to recover from her terrible awakening, the evil genius of political ambition plunged her into the still grimmer horrors of civil war, renewed again and again.

The consequence is that, at the present time, Spain possesses but a small remnant of her once magnificent colonial empire. The possessions which still remain to her include the Spanish zone on the north coast of Morocco; a strip of territory, of little value, stretching from Cape Blanco to the Wadi Draa, on the western coast of the Sahara; the little islands of Fernando Po, Annobon, Corisco, and the Elobeys, in the Gulf of Guinea; Spanish Guinea and the Canary Islands, which administratively are accounted an integral part of Spain proper. All her former possessions in the West Indies, together with the Philippine Islands, were given up after the war with the United States

in 1898, when this latter power acquired also Guam, the largest of the Marianne or Ladrone Islands. The remainder of this group, as well as the Caroline and Pelew Islands, were sold to Germany in 1899.

In spite of the apathy of the people, their complacent ignorance, and the terribly antiquated methods of their tillage, there are not lacking signs that Spain is in part awakening out of her century-long sleep. It is the railways which are doing this; and next after the railways, the exploitation of the rich mineral resources of the country, though this, it is true, is mostly through the instrumentality of foreign capital and foreign enterprise; and next after the development of mining, the initiation and reawakening of industrial energy in certain of her peripheral districts. About five-sixths of the area is estimated as productive, of this a quarter each is grassland and fruit orchards, the remainder being arable. Cereals, grape products, and fruit on the one hand, and ores and metal goods on the other, are the chief exports. Much of the foreign trade of the country is with France and Britain.

# CHAPTER V

#### PORTUGAL

# 1. People-Towns

Owing to the orographical configuration of the country as well as to the inveterate dislike which her people cherish for the Spaniard, Portugal directs her attention almost exclusively seawards. She is, and has been, a maritime nation. As in Norway, all the towns of any importance are situated on the sea-coast or within sight of the sea. It is immediately contiguous to the sea that her people are collected in the greatest density. There is, however, a wide difference between the density with which the several provinces are settled. In the wine region of the north there are 670 persons to the square mile in the district of Porto; in Beja district only 45.

The stress of historical circumstances made the Spaniards a people of war. The Portuguese, in virtue of their geographical position, took more freely to commerce and trading oversea. Spain colonised the Americas, and exploited their treasures. Portugal sent her ships to

<sup>&</sup>lt;sup>1</sup> Area, 35,490 square miles (of which 1236 square miles, with 412,000 inhabitants, belong to the Azores and Madeira); pop. (1878), 4,551,000; (1890), 5,082,000; (1911), 5,958,000; (1920), 5,628,610 on the mainland.

Africa and India, and brought home rich ladings of spices and slaves. There are traces of Negro blood discernible in many a native of Portugal even at the present day.

The methods of tillage in vogue in this country are nearly as antiquated as those of Spain. Three-fifths of the surface is productive. The vine is the principal crop grown, along with wheat and maize in the centre, and wheat and fruits in the south. Leguminous plants are grown for food all over the country. Cattle-grazing flourishes in the north, and pig-rearing in the south. The prosperous fishery of Algarve has been already mentioned. The industries of Portugal are mostly of recent development, but are vigorous and thriving. The cork-oak is extensively cultivated.<sup>1</sup>

Portugal possesses only two towns of any size or importance, both on the coast. Lisbon 2 (a contraction of Olisipo, the name of the ancient Lusitanian capital), the capital, with its palace-crowned heights, competes for the palm of beauty with Constantinople and Naples. The prospect presented by the Tagus is surprising and impressive when seen from the land, better still, from the heights above the city; most impressive of all when we stand on deck and survey the panorama as it glides by on the right and left. The eye ranges over the metropolis, embracing the hills and dales by the shores of Tagus, with their dazzling white houses buried in trees, the tops of the hills crowned by castle, cloister, and cathedral, and though betraying traces of neglect and decay, still presenting a prospect such as can be seen only in the sunny south. Beyond lies the blue expanse of the bay, one of the finest natural harbours in the world, enlivened by

<sup>&</sup>lt;sup>1</sup> For the mineral resources of Portugal, see above, pp. 193-6.

<sup>&</sup>lt;sup>2</sup> (Lisbon), pop. (1864), 163,800; (1890), 301,200; (1920), 490,000.



vessels of all sizes. To the south rise in clear sharp outline the heights of the Serra d'Arrabida, near Setubal. As we sail seawards, on our left lie the steep limestone hills of Almada, on the right Belem, with its venerable cathedral, and square fort defending the entrance to the harbour. Over the wooded hills north of the Tagus, dotted with many windmills, rise the jagged outlines of the Cintra Mountains. The past history of Lisbon might justly entitle her to be called the "city of misfortunes." Sieges, plagues, and earthquakes have all laboured to destroy her. The most terrible catastrophe was the great earthquake of 1755, which overwhelmed in ruin the entire western half of the city. But she has risen again from her ruins with commendable improvement in style of building and plan of arrangement. Lisbon is frequently a port of call for the great ocean liners of England, France, and Germany on the way to the Mediterranean, Africa, and Brazil. With this last-named country she keeps up active commercial relations of her own.

Oporto,<sup>1</sup> the second city of the kingdom, is the Portus Cale of the Romans, and, itself meaning "the port" (O porto) pur excellence, gives its name to the entire country. It occupies a picturesque site on steep ground sloping down to the Douro. "The houses, as they rise confusedly from the water's edge, some painted in strong reds, blues, or greens, some left whitewashed, and the majority retaining the granite grey of the stone they are built with, make up a very strange and beautiful panorama, ringed as the city is by the encircling pine-covered mountains." Oporto is the shipping place for port wine, the commercial emporium of North Portugal, and has lately developed a vigorous industrial energy in the

Oporto), pop. (1864), 86,800; (1890), 138,900; (1920), 203,000.
 Oswald Crawfurd in New Review (1889).

manufacture of textiles, porcelain, tobacco, corks, metal-casts, etc.

In southern Portugal the three decayed towns (once Roman fortresses) of Beja, Evora, and Elvas command roads from Spain converging upon Lisbon; but the only one of any importance at the present time is *Elvas*, the counterpart of Badajoz. It overlooks the railway from Madrid to Lisbon.

#### 2. Colonies

Historically there is perhaps no spot in the kingdom of Portugal which possesses a greater interest than the little town of Sagres on the bold headland of Cape St. Sagres takes its name from Latin sacrum, meaning "holy." In the opinion of the ancients this promontory was holy as marking the spot of land which stretched farthest west into the ocean towards the Isles of Bliss. It was from this holy promontory that Prince Henry the navigator, son of John I., King of Portugal, sent forth those successive maritime explorers, who began by discovering the Azores and the Madeiras and ended by winning a colonial empire which stretched from Brazil to India. Portugal's power was a thing of quick growth; even quicker was its decline. the causes which contributed to this decay some were of the same character as those which co-operated in Spain—the extensive emigration of the more enterprising spirits of the nation, the expulsion of the Jews, the supremacy of the Inquisition; but more than these it was the unfortunate fact that the crown of Portugal became united with that of Spain on the brow of Philip II. This involved the country in the misfortunes of Spain, and led to the loss of several of her colonial possessions. Brazil, however, remained closely

united to the mother country down to the beginning of the nineteenth century, being finally lost through the selfish ambition of the royal house.

At the present day, Portugal exercises ownership over the Azores <sup>1</sup> and the Madeiras, <sup>2</sup> both reckoned as integral parts of the kingdom. The former, nearly 1200 miles west of the Portuguese coast, are a volcanic group, with a fertile soil, a dense population, and a fine climate. The Madeiras, which geographically belong to Africa, enjoy a climate which attracts numerous visitors of the convalescent order.

Portugal has other possessions in Africa, namely, the Cape Verde Islands, Portuguese Guinea, St. Thomas and Prince's Island in the Gulf of Guinea, Angola on the west coast, and Mozambique on the east coast. In Asia, Goa, Diu, and one or two other small places in India, part of Timor in the East Indian Archipelago, and Macao in China still belong to her. All these possessions were granted a partial autonomy in 1914.

<sup>&</sup>lt;sup>1</sup> Area, 922 square miles.

<sup>&</sup>lt;sup>2</sup> Area, 314 square miles.

### CHAPTER VI

#### FRANCE

#### 1. Outline and General Relief of the Land

France, as depicted on our maps, presents the form of an irregular polygon, surrounded in part by oceanic and in part by land boundaries. In consequence of the coast-line being for the most part free from marked sinuosities, the seaboard is not large in proportion to the area of France, but this is abundantly compensated by the many navigable rivers and canals which intersect the country.

Though not so rugged as its neighbours to the south and south-east, France is far from being on the whole a level plain, as is apt to be fancied by those whose knowledge of the country is derived mainly from an acquaint-ance with the northern departments. It is, in fact, to a large extent a mountainous land. Almost all the west is composed of level or undulating tracts, the principal exception being presented by the rough hilly country, mostly under 1000 feet in height, which runs from east to west along the northern half of Brittany and the southern half of Normandy. But the plains gradually ascend eastwards to a region of mountains and plateaux of considerable elevation. It is true that the highest summits of France belong to the frontier ranges of the

### FRANCE





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Alps and the Pyrenees, but in the very heart of the country there are many peaks higher than the highest in our own islands. These rise from a large plateau occupying almost all the south-east, and surrounded on the north, east, and south by the valleys of the Loire and Saône, the Rhone, and the Aude and Garonne. The Canal du Centre, connecting the Loire and Saône, and crossing the water-parting between the two basins at an altitude of about 1000 feet, indicates the lowest line of the depression that bounds it on the north, and the Canal du Midi connecting the Aude and Garonne similarly marks out the depression severing it from the Pyrenees.

Compared with Italy and Switzerland, for example, France is an old land. The curves of the Tertiary fold mountains, Pyrenees and Alps, connected with the Betic Cordillera by the Balearic Islands, were pushed upwards by pressures exerted against the Central Massif of France, and brought into being the depressions occupied to-day by the Gate of Toulouse and the valley of the Rhone. archean rocks of the Central Massif are connected with the remnants of the Armorican and Variscan Mountains. North-west the junction with the Armorican plateau is by the Gatine or Heights of Poitou, sometimes called the Poitevin saddle. North-east it is joined with the Variscan Vosges by the granitic heights of Morvan and the Plateau of Langres. Within the curve indicated by these heights lies the Paris basin. North-west of this basin the low saddle of Normandy-Picardy joins the Armorican highlands with the Ardennes, which are connected with the Vosges by the Lorraine saddle. One other physical component completes France, the western half of the Rhine rift valley, between the Rhine and the Vosges-Alsace, joined to the Rhone depression by the Gate of Burgundy.

# 2. River Systems

One point of interest regarding the great rivers of France is that they are all of post-Miocene date. The Pyrenees and the central highlands of Europe all underwent a post-Miocene upheaval, and in France this had the effect of giving to the horizontal Secondary and Tertiary plains that tilt to the north and west which determined the direction of flow of most of the great rivers. The basin of the Rhone was cut off on the east at the same time by the elevation of the plateau of Langres, the scarps of Charolais and the Cevennes; and, moreover, in Miocene times a large lake occupied the region now drained by this river after leaving the Lake of Geneva, the last relic of that older and larger lake.

With respect to the present features of the hydrography, the rivers of France may be compared with those of the Iberian Peninsula. The comparison is at once suggested by the fact that in both cases most of the great rivers flow in nearly parallel courses westwards to the Atlantic. The water-parting in both cases runs on the whole from north to south, and nearer the east than the west, but in both cases it leaves one great river on the east side to flow into the Mediterranean. These are the most obvious points of agreement between the river-systems north and south of the Pyrenees, but when we examine the subject more closely we find very important points of difference. In the first place, the configuration of the country north of the Pyrenees allows of the development of a much larger central basin relatively to the length of the river draining it. The Tagus, which may be called the middle river in the Iberian Peninsula, is a few miles longer than the FRANCE 271

Loire, which holds the same position in France, but its basin is about one-third smaller than that of the French river. This fact in itself would naturally give the French stream a superiority as regards the volume of its water, but in this respect, as well as in respect of the facilities afforded to navigation, all the French rivers of the west excel those of the southern peninsula. The former advantage is due to the fact that they drain areas of higher rainfall, and the latter is in part a direct consequence of the former, partly a result of the difference in the configuration of the land.

Among themselves the rivers of France differ as regards their behaviour—that is, their fluctuations in volume, depth, and speed, and consequent fitness for regular navigation, in accordance with the rate in the fall of the bed and the character of the prevailing rocks of the basin. The more rapid the fall of the bed the swifter is the current, and all the more so in times of high water. The greater the extent of practically impermeable rocks on the surface of the basin the more speedily will the surface water run into the streams and be swept into the main river. Now it so happens that the largest of French rivers, the Loire, has its two main head-streams at a high altitude in the Central Massif, so that the fall in the bed from the source to the plains is rapid. The Loire rises at an altitude of 4510 feet, and descends 3945 feet between its source and Bec d'Allier (565 feet) at its confluence with the Allier, a rate of nearly 15 feet per mile; the Allier rises at an altitude of 4670 feet, and in its course to the same point descends 4105 feet, a rate of 16 feet per mile. Now the region in which those rivers rise and from which their upper courses are principally fed, is mainly composed of impermeable rocks, and such rocks form at the surface 40

per cent of the basin of the Loire, as against only 25 per cent in that of the Seine. The mean rainfall of the year is approximately the same in the basins of both rivers, about 27 inches. The consequence is, that while the mean discharge for the year of both rivers is estimated to be nearly proportional to the area of the basins, the volume of the Loire is subject to a much greater rise and fall than that of the Seine, except near the mouth where the influence of the tide affects the volume of the river. In flood the discharge of the Loire rises at Orléans to 265,000 cubic feet per second, while it sinks at low water to 1590 cubic feet per second, a ratio of 366:1; at Paris, in nearly the same meridian and approximately the same relative position in the course of the Seine, the flood volume of that river is about 56,500 cubic feet per second, the low-water volume about 1870 cubic feet per second, a ratio of 30:1. And the very circumstances that bring about this difference cause the floods of the Loire to be much more sudden and terrible than those of the Seine. In 1846, for example, the Loire rose at Roanne, about the place where it emerges from the mountains, 21 feet in six days, and in twenty-three days, after attaining a maximum depth of 22.8 feet, fell to a depth of somewhat less than 2 feet. On the other hand, in 1854, the Scine at Montereau took twenty-four days to rise  $5\frac{1}{2}$  feet, and required other thirty-seven days to sink again to its normal level. The Seine is thus a river of remarkable regularity, causing little loss of land on its banks for agriculture, little subject to changes of its bed in the plains, and the consequent formation of dead arms, easy to navigate under natural conditions, and easy to embank so as to render the channel more easily navigable and accessible to large





boats for a longer distance up stream; while in all these respects the Loire is just the reverse. The basin of the Garonne is mainly composed of permeable rocks, but this advantage is counterbalanced by the rapidity of the fall in its chief head-streams, and hence at Tonneins, below the point at which it receives its last important affluent above the Gironde, its volume varies from about 424,000 to 1300 cubic feet per second, a ratio of 327:1. Toulouse, which stands as it were at the mouth of the spout of a funnel collecting numerous affluents from the Pyrenees, is peculiarly endangered from this cause, as was shown in the disastrous flood of 1875, when the level of the Garonne rose more than 30 feet. The Rhone, the most rapid of all French rivers, is the least variable in volume, owing to the variety of the conditions by which it is influenced. Just before entering France it traverses the important regulator of the Lake of Geneva, so that on issuing from that lake its volume fluctuates only from about 7000 to 21,000 cubic feet per second. Lower down its variations in volume are governed partly by the comparatively steady rains of the basin of the Saône, partly by the much more violent rains of the Cevennes, and partly by the melting of the snows as well as the rains of the Alps. The variations in these different regions partly compensate one another, so that the discharge of the main stream varies only from about 530,000 to about 17,600 cubic feet per second, a ratio of about 30:1.

Taking these rivers in detail, and beginning in the south-west, we meet first with the Adour, a river which rises in the department of Upper Pyrenees, passes in the upper part of its course the village of Bagnères de Bigorre, celebrated for its hot baths, becomes navigable about 80 miles from its mouth, and, after traversing the southern

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fertile part of the department of Landes, enters the Bay of Biscay below Bayonne. Next comes the much more important river, the Garonne, which, rising in Spanish territory in the high valley of Aran, enters France through a deep defile cut in rocks of marble near St. Béat. Above Bordeaux it receives many tributaries, both on the right and left, the former (Ariège, Tarn, Lot, etc.) being the most important, while a little below the town just named it receives the most notable of all its tributaries, the Dordogne, which, after descending from the mountains of Auvergne and traversing the intervening plain, unites with the Garonne to form the large estuary of the Gironde—a tidal basin into which it is estimated that as much as 265,000 tons of water is carried at every tide. It is studded with numerous islands and ever-shifting sandbanks.

The Loire, the ancient Liger, rises on Mont Mézenc in the Cevennes, only about 30 miles distant from the Rhone. In the upper part of its course it flows, like the twin-stream the Allier, in a more or less northerly direction across the central plateau of France, both streams presenting examples of fluviatile erosion of the most impressive and instructive kind. At Roanne, about one-fourth of its entire length from its head, it becomes navigable. At Nevers, a little above the point where the two main head-waters, the Allier and the upper

1 Length, 543 m.; area of basin, 46,758 sq. m. (Strelbitsky).

<sup>2 &</sup>quot;Striking as are the proofs of erosion in the country of the Limagne, they fall far short of these in the Haute Loire. To be actually realised, such a scene must be visited in person. No amount of verbal description, not even the most careful drawings, will convey a full sense of the magnitude of the changes to one who is acquainted only with a glaciated country such as Britain. The first impression received from a landscape like that round Le Puy is rather one of utter bewilderment. The upsetting of all one's previous estimates of the power of rain and rivers is sudden and

Loire, unite, the latter cuts its way through traps and Jurassic rocks bounding the plateau, and thenceforwards flows through a lower country, though not an unbroken plain. On the north bank especially it is skirted by low hills, such as the hills of Morvan and the table-land of Orléanais. In this middle part of its course it traverses some of the most beautiful scenery in France —a region occupied by old castles and modern châteaux, by pastures and vineyards, forests and cornfields. Below Orléans, however, the river, from the causes above set forth, is liable to overflow its banks, to guard against which it has been provided as far as Angers with embankments. This method of restraining the river began to be employed at least as early as the ninth century. Throughout the Middle Ages the embankments were maintained at the height of about 10 feet, which in the seventeenth and eighteenth centuries was increased to 23 feet. But this method obviously creates the necessity for still further additions to the height of the embankments, as the bed of the river gets raised by the accumulation of the deposits in the restricted river bed, and only increases the evil, when, as happened in 1856, the embankments are unable to resist the flood. Hence the plan of ponding back the upper reaches of the river by means of dykes or barrages has been strongly urged by engineers, and a small beginning with this method has been made as at Pinay, a few miles above Roanne.

complete. It is not without an effort, and after having analysed the scene, feature by feature, that the geologist can take it all in. But when he has done so, his views of the effects of subaerial disintegration become permanently altered, and he quits the district with a rooted conviction that there is almost no amount of waste and erosion of the solid framework of the land which may not be brought about in time by the combined influence of springs, frost, rain, and rivers."—Geikie, Geological Sketches, p. 121.

The increased value which the application of electricity gives to water-power is not unlikely to favour the extension of this method, which lends itself also to irrigation, and by regularising the current tends to promote navigation. Unlike the Garonne, the Loire receives most of its chief tributaries (Cher, Indre, Vienne, Sèvre Nantaise, etc., besides the Allier) on the left bank, the only important affluent on the right being that formed by the union of the Mayenne from Brittany, and the Sarthe and Loir from Maine and Poitou. At the mouth of the river is a bar, the Barre des Charpentiers, on which there is a depth of only 13 feet at low water, but by means of a ship canal, opened in 1892, vessels drawing 19 feet are now able to ascend to Nantes at high water.

A little to the south of the Loire, near Nantes, is a large sheet of fresh water in a granite basin known as the Lac de Grand Lieu. This lake stands to the Loire in the same relation as the Neusiedler See in Hungary to the Danube, being alternately a feeder and a recipient of its overflow, according to the height of the main stream. Near the mouth of the Loire is a large peatbog known as the Grande Brière.

The Scine <sup>1</sup> in its meandering course forms the third great river basin of western France, lying between the basins of the Loire and the Meuse. It rises on the northern slope of the limestone hills of the Côte d'Or, at an elevation of 1463 feet; some of its tributary streams, however, draw their waters from remoter sources among the granitic and other crystalline rocks of the Morvan. It becomes navigable at Méry below Troyes, about 350 miles from its mouth. At Paris the Seine receives the Marne—a river of greater length though of less volume—which also takes its origin on the plateau

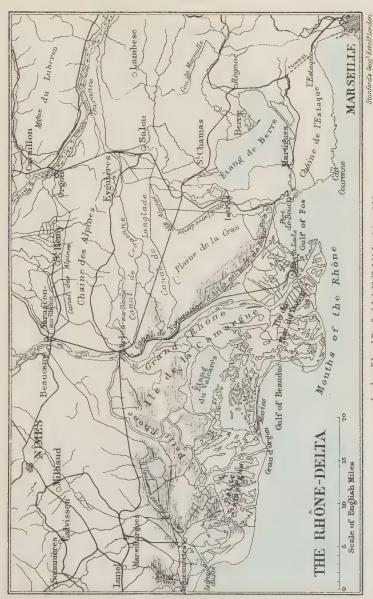
<sup>1</sup> Length, 425 m.; area of basin, 30,028 sq. m. (Strelbitsky).

of Langres. The lower Seine in its sinuous course washes the old city of Rouen, below which its bed was formerly greatly obstructed by sandbanks, but regulating and dredging operations have already made the port of Rouen accessible to vessels drawing 22 feet, and the dredging is to be continued till a depth of  $23\frac{1}{2}$  feet is obtained. From Tancarville, at the head of the estuary of the Seine, a canal enables smaller vessels drawing not more than  $11\frac{1}{2}$  feet to reach Harfleur and Hâvre, and thus avoid the difficulties of navigation between these ports and the mouth of the river proper.

Coming now to the only great river on the east side of the water-parting, the Rhone, one is struck, on looking at the map, at the directness with which the course of the Saône is continued in a straight line southwards by the lower course of the Rhone; one might be apt to regard it as the true head-stream of the main river, but the difference in the current establishes the true identity of the main stream. The Saone is the river which many will remember from their schooldays as that mentioned by Cæsar, under the name of the Arar, as flowing with incredible slowness, whereas the "arrowy Rhone" preserves its impetuosity from its source to its mouth. In the 200 miles from its junction with the Saône to its mouth it falls altogether 532 feet, giving an average of 32 inches to the mile, or 0.5 foot in 1000. But the rate of fall varies in different parts, being in some sections much higher. From Lyons to the confluence of the Isère the fall is at the rate of 0.63 per 1000, thence to the confluence of the Drôme 0.53 per 1000; thence to the confluence of the Ardèche 0.81 per 1000; but below this point always below the average above mentioned. Just above Arles the Rhone divides into two arms traversing a delta and enclosing the Camargue, the eastern arm known as the Grand Rhone and carrying 86 per cent of the volume of water, and the western known as the Petit Rhone. The rapidity of the current due to the rapid fall of the bed offers considerable obstacles to navigation in ascending the stream.

Officially the Rhone 1 is reckoned as "floatable" from the Swiss frontier to the Parc, a point 20 miles below the frontier, and navigable thence downwards to its mouth. But the 95 miles from the Parc to Lyons has a depth of less than 2 feet at low water, when navigation ceases, or almost ceases. The section from Lyons to Arles (178 miles) has a minimum depth of 3.6 feet, and is made use of chiefly by steamers of 400-500 tons, with a draught of about 4 feet 3 inches, which must accordingly remain idle at low water, and are warped by a peculiar method up-stream either empty or only half laden. The section from Arles to the sea (30 miles) can be used at all times by vessels drawing 4.6 feet draught. The communication between the Grand Rhone and the sea is effected by a canal 2 miles long, from St. Louis eastwards to the Gulf of Fos (the ancient Fossor Mariana, which is now a thriving port accessible to vessels drawing from 16-19 feet and carrying on an active trade with Algeria. The fear lest the Gulf of For should be choked up by the deposits of the Rhone has been averted by the opening in 1893 of a new mouth for the Rhone, called the Grau de Roustan, leading westwards. A canal also leads from Arles to Port de Boue on the east side of the Gulf of Fos, but this is now less frequented. Above Lyons the navigation is continued for about 170 miles up the Saône, the chief tributary of the Rhone on its right bank and one of the easiest and most valuable of the natural water-ways of

<sup>&</sup>lt;sup>1</sup> Length, 447 m.; area of basin, 38,181 sq. m. (Strelbitsky).



London : Edward Stanford, 1rd., 12, 13, & 14, Long Acre, W.C.



France. The tributaries which the Rhone receives on the left from the Alps, and on the right from the Central Plateau (that is, below the influx of the Saône), are all mountain torrents liable to great floods during rainy periods, but diminishing greatly in times of drought. Those on the left, the Arve, Isère, Drôme, and Durance, then dwindle away almost entirely, but those on the right are more constant, being fed by springs originating in the limestone caves of the Cevennes. Fortunately the floods to which those on both banks are liable never occur at the same time, for the slopes on either side of the Rhone basin are in each case protected from the winds which bring heavy rains to the other side. waters of the Durance in its lower part are largely made use of by means of canals for irrigation, like those of the east of Spain. The region north of the Rhone, watered by its great tributary the Saône, with its feeder the Doubs, and by the Ain, presents a marked contrast to the narrow valley traversed in furious haste by the Rhone itself. All to the west of the Ain, that is, to the west of the Jura, is a fertile alluvial plain forming the old province of Burgundy.

# 3. Geology

A great peneplain of granitic and gneissose rocks, skirted by crystalline schists, occupies the centre of France. Rocks of similar character also crop up in the northwestern departments, the greater part of the peninsula of Brittany being formed of granitic and schistose formations. Southwards from Morbihan the same rocks are continued into La Vendée, where they constitute the heights of the Vendéan Bocage. On the castern side of France granites again come to the surface and form the heart of the

Vosges Mountains. The peculiar dome-shaped ballons of the Vosges are mostly granitic bosses. With these granites are gneissose rocks and crystalline schists, the former being notable for containing in many places intercalated masses of saccharoidal limestone. In the Alpine districts of the south-eastern departments old crystalline rocks are also to be found—especially in the massives of Mont Blanc and of the Oisans; while farther to the west, in the department of the Var, similar rocks form the hills of Les Maures and L'Estrelle.

The lower Palæozoic strata—comprising the Cambrian and Silurian series—occur principally in Brittany and Normandy. From near Alençon on the east they stretch to the neighbourhood of Brest on the west; while in a north and south direction they extend from Cherbourg to Angers. At Angers the Cambrian slates are worked for roofing purposes. One of the best known localities for Silurian fossils is Néhou (Manche). Devonian rocks form a fringe round part of the Silurian area, and they occur also in the Pas-de-Calais and on the north-eastern frontier, whence they extend into Belgium. Some of the Pyrenean marbles are clearly of Devonian age.

Unfortunately for France the Carboniferous formation is not extensively developed. The Carboniferous limestone is found only in small patches around the Central Plateau and in the neighbourhood of the Palæozoic area of Brittany. Its presence beneath the Wealden rocks of northern France has been proved by boring; and a small patch of the limestone, in nearly vertical beds, crops up in the Boulonnais. The principal coal-fields will be noticed in the next section of this chapter.

In the neighbourhood of the Vosges is a fine development of the red sandstone known as the *Grès des Vosges*, believed to be of Permian age. Strata referred to the

Trias are found in the departments of Calvados and La Manche, on the flanks of the Ardennes, near the granite of the Côte d'Or, in Provence, and in the Pyrenean region. The Triassic beds consist of *Grès bigarré* (Bunter), and of marnes irisées (Keuper), separated by an equivalent of the German Muschelkalk.

The Jurassic strata—including the Lias and the Oolites—are very largely developed. Not only do they occur in the Jura, whence they took their name, but they are found in the Alpine districts of the south-eastern departments, round the skirts of the Palæozoic districts of the north-west, and in the Bas Boulonnais. They also form a broad zone stretching across France in a double curve; from the Ardennes to La Rochelle they trend in a direction from north-east to south-west, and thence turning south-eastwards they pass from La Rochelle to Montpellier. In many parts of their course the Oolitic rocks are quarried for building purposes. The famous Caen stone of Normandy—so largely used by mediæval architects even in this country—is obtained from beds equivalent to our Bath Oolite.

Cretaceous strata follow for the most part the outcrop of the Jurassic rocks. They form the greater portion of Normandy and Picardy; they are largely developed in the basin of the Loire, or of Touraine; and they are exposed on the northern slopes of the Pyrenees. In the south of France the chalk forms a hard limestone, rich in the peculiar molluses known as *Hippurites* or *Rudistes*. On the contrary, the chalk of northern France is a soft earthy limestone, resembling in physical characters, as also in its fossils, the ordinary type of English chalk; indeed, the upper Cretaceous rocks of England, Belgium, and northern France appear to have been deposited in a marine area, cut off from the Cretaceous seas

of southern Europe, and known as the Anglo-Parisian basin.

Eocene rocks cover the Cretaceous strata to a very large extent. They are extensively developed in northern France, occupying the greater part of the basins of the Seine and the Loire, and they are also largely represented in the basin of the Garonne, stretching indeed over all the south-western part of France. The Sables de Bracheux of the Paris basin are equivalent to our Thanet Sands; but it is notable that no representative of the London clay is found in the Parisian area.

The post-Tertiary deposits, known as "diluvium," compose a large part of the soil of France. They occur along the north-eastern shores from Dunkirk to Calais, they are found in the Landes in the south-west, and they occupy many of the river valleys throughout the country.

### 4. Minerals

As in the United Kingdom coal forms in France the most important mineral product, and in about the same proportion, the annual value of this product in both countries being somewhat more than three times the aggregate value of that of all other minerals apart from building and other stones; and seeing that the total amount of coal produced in France is only about one-seventh of that produced in Great Britain, this fact shows how great is the inferiority of France in mineral production as a whole. The annual production of coal in France is equal to about three-sevenths of her consumption. The coal-fields of France extend over about 2160 square miles, but they are mostly small and scattered, and except in the north, where the Belgian coal-field on the margin of the Devonian uplands of that

country extends into the departments of Nord and Pas de Calais, do not tend to the aggregation of an industrial population in districts of any considerable extent, as in Great Britain, Belgium, and Germany. This northern coal-field yields a good deal more than half of the total French production, even though the distribution of the coal there is in some respects by no means advantageous. The coal lies to a large extent under a covering of upper Cretaceous and Tertiary deposits varying from 150 to 650 feet in thickness. The seams are generally thin, on the average little more than 2 feet thick, and they dip downwards from the Belgian frontier, so that whereas the pits near Valenciennes (Anzin, Somain, etc.) are about 500 feet deep on the average, those near Boulogne and St. Omer (Flechinelle, Hardinghem) are much deeper and consequently far from productive. The working of the mines of Anzin dates from 1734. Numerous small coalbasins occur round the margin and on the top of the Central Massif, and of these the most productive are those on the north, the coal-fields of central France. The largest is that of Roannais, which lies chiefly in the department of Loire, stretching from south of St. Etienne to north of Roanne, about 50 miles long by 12 broad. Near St. Etienne there are eighteen seams mostly with an aggregate thickness of 115 feet, but elsewhere there are only three workable seams with a total thickness of about 30 feet. The basin in Saône-et-Loire round Le Creuzot, and extending westwards to Decize on the Loire, below the former basin, ranks next in size and productiveness among those in this region, and after these comes the small but interesting and productive basin of Commentry in the department of Allier, near Montluçon. The extent of this last basin is only 5½ by 2 miles, but the main seam forming a small basin about a mile in

length, with a maximum depth of 525 feet, attains a thickness of 65 feet. On the southern (south-eastern) margin of the Central Massif the most productive coalfield is that of Alais in the department of Gard (to a small extent in that of Ardèche), where the conditions for working are generally favourable, the basin containing six seams with 60 to 66 feet of coal. On the southwest margin of the Massive there is another important coal-field between the Tarn and the Lot, departments Tarn and Aveyron, with the mining towns of Carmaux, Cransac, and Decazeville. Some small and unimportant basins lie in the west, from the peninsula of Cotentin in Normandy to Vendée, and others in the Alps.

Anthracite occurs on the flanks of the Alps, and has been worked in the department of Isère. Lignite, or brown coal, is an object of exploitation in the neighbourhood of Marseilles, and near Dax in the Pyrenees.

Of *iron ores* the most important deposits are those of brown hæmatite worked in Oolitic rocks, principally in the department of Meurthe-et-Moselle. Other deposits of iron ore are worked in the departments of Pyrénées-Orientales, Gard, Isère, Haute-Marne, and Saône-et-Loire, the last occurring round Le Creuzot and deriving special importance from the coal worked in the immediate neighbourhood.

The picture of French resources in coal and iron conveyed by the preceding paragraphs is of interest, since it throws into relief the changes which ensue from the Great War. The coal mines of the north were seriously damaged, with the result that for a term of years the coal of the Sarre basin is to be French instead of German; the inclusion of Alsace-Lorraine in France gives that country the minette ironfield of Lorraine, so that France is now almost the equal of Germany as regards coal and iron.

The other metallic minerals of France are not of great importance. Lead ores occur at Pontgibaud, in the Puy-de-Dôme, where a fine argentiferous galena is worked. The rich mines formerly worked at Huelgoat and Poullahouen in Brittany (dep. Finistère) are exhausted. Tin ore occurs in Brittany, a country of which the geological structure resembles that of Cornwall. Copper was formerly worked at Chessy, near Lyons, where the ores occurred at the junction of Triassic and Liassic strata with mica-schists. The mines were notable for yielding fine crystals of blue carbonate of copper, which was termed Chessylite, from its occurrence at this locality.

Gold is found in many of the streams flowing from the Alps, the Pyrenees, and the Cevennes. The richest auriferous sands appear to be those of the Rhone, and for a long period the washing of these deposits formed a recognised branch of industry.

Deposits of phosphate of lime are very abundant and largely worked in Normandy, Champagne, and Lorraine, and generally amongst the Jurassic strata. Clays of fine quality are supplied to the porcelain factories of Sèvres and Limoges from St. Yrieix, about 20 miles south of the latter town, where the decomposing granite yields a pure kaolin. Building stone is obtainable almost everywhere. Slate is extracted from enormous deposits of argillaceous schists in the neighbourhood of Angers, especially from Trélazé, and also from Fumay in the Ardennes.

Salt is produced on a large scale from the salt-pans round the coast, and to a still greater amount from mines of rock-salt, the most productive of which are those of Varangéville, St. Nicolas, Rosières-aux-Salines, etc., near Nancy. Mineral and thermal springs abound in Auvergne (Royat, la Bourboule, Monte Dore, Vichy), in the Pyrenees (Cauterets, Eaux-Bonnes, Eaux-Chaudes,

Barèges, Bagnères - de - Bigorre, Bagnères - de - Luchon, Amélie-les-Bains), in the Alps (Aix-les-Bains, Uriage), and in the Vosges (Bussang, Contrexéville, Plombières, Bourbonne-les-Bains)

## 5. Climate, Flora, and Fauna

The chief differences between the climate of France and that of Britain consist in the higher temperature due to its lower latitude, and the less degree of humidity, owing to the generally level character of the west. average annual rainfall of the whole country is computed at 30:3 inches. On its seaboard France shares in the benefit of the equalising effect on temperature of the ocean with its warm currents and warm winds; but as we go eastwards we discover on a small scale the same phenomenon as is met with in Europe generally, an increase in the extremes of heat and cold in summer and winter. At Brest in Brittany the mean temperature of summer is 62.2° Fahr., that of winter 44.8°, showing a difference of 17.4°, while at Nancy, in nearly the same latitude on the eastern frontier, the summer temperature is 65.1°, the winter 35.2°, showing a difference of nearly 30°. The winter of Brittany and Normandy is actually milder than that of Montpellier near the shores of the Mediterranean, and in consequence of those mild winters many exotic plants flourish in the open air in Brittany which do not succeed elsewhere at so high a latitude. Camellias are grown in the open air throughout Brittany, and several varieties of bamboo from Japan and China are grown in the botanic gardens at Brest, where also the Yucca gloriosa attains in the open air a height of 10 feet. A striking illustration of the difference of climate between west and east is furnished by the distribution of the cultivation of

the vine. For its successful growth the vine demands a warm summer, though it can stand a tolerably severe winter, and this requisite degree of summer heat it finds in the south-west, in the valley of the Garonne, as well as in the south-east on certain parts of the Mediterranean, but in the north of the country only on the eastern side, namely, in the district watered by the Saône and Doubs (Burgundy), and in the departments of Marne and Aube (Champagne). The Central Plateau of France has a remarkably bleak climate, cold northerly winds prevailing here all the year round, and as this is combined with a sterile soil, the aspect of vegetation is less inviting here than in any other part of the country. An account of the mistral or cold wind of Provence has already been given in the general Introduction, but we must here note more particularly the very remarkable effect it has upon vegetation. In the narrow valley-bottom of Donzère, between Montélimart and Orange, where its influence begins to be felt, we see a sudden transition from the vegetation of northern Europe to that of the Mediterranean region. It is here that the cultivation of the olive begins, and in the small triangle between Orange, Nice, and Perpignan there grow as many as 600 plants which are met with nowhere else in France. This sudden change in the aspect of the vegetation is without doubt due to the dry air and bright sunshine which the mistral, so much dreaded and disliked for its violence and its cold, nevertheless brings with it. the mean temperature of the air the mistral must, however, exert a lowering influence, for in this part of France we do not meet with the same increase in the summer temperature from west to east as we do farther north. Bordeaux, at the head of the Gironde, has the same

<sup>1</sup> Grisebach, Vegetation der Erde, i. 250.

summer temperature (71° Fahr.) as Orange, in nearly the same latitude, at the head of the triangle just mentioned.

The highland flora of the Alps and l'yrenees, France shares with the other Alpine lands. Its fauna agrees on the whole with that of central and southern Europe, the only difference being that more cattle and sheep are found in the north of France, whilst the stock of horses is scarcely equal to its requirements. The wolf and the wild boar have not yet been extirpated (indeed the wolf is, for hunting purposes, partly preserved in Brittany); and in the south bees, producing the famous Narbonne honey, and still more the silkworm, are extensively reared. The sea yields fish in great abundance, including the tunny, herring, and sardines.

## 6. Government and Administration

France became a republic in 1870. At its head is a president elected for seven years by the united chambers forming the legislative assembly. These are the senate and the chamber of deputies, both elective bodies. The senate consists of over 300 members elected for nine years, one-third of them being elected every third year. The chamber of deputies varies in number according to the population at the previous census. Deputies are elected for four years by manhood suffrage. War can be declared only by the united chambers sitting as the national assembly, which also must ratify all treaties. A council of state gives advice on all legislative proposals.

<sup>&</sup>lt;sup>1</sup> Area, 212,659 square miles; population (1801), 27,349,000; (1846), 35,402,000; (1861, after the annexation of Savoy and Nice), 37,400,000; (1872, after the cession of Alsace-Lorraine), 36,103,000; (1896), 38,229,000; (1911), 39,601,509; (1921), 39,209,518.

Under all forms of government the administration of France is highly centralised. The present mode of division into departments dates from the time of the Revolution, but the number of departments has varied from different causes—gain or loss of territory or internal rearrangement. There are now eighty-nine departments besides the territory of Belfort. Each department is divided into arrondissements, but the territory just named, the only part of the former department of Haut-Rhin remaining to France after the Franco-German war of 1870-71, forms a single arrondissement. The arrondissements are subdivided into communes, and for judicial administration the communes are grouped (some of the larger ones, however, subdivided) into cantons, in each of which is a justice of the peace. There are elective local councils (conseils municipaux, conseils d'arrondissement, et conseils généraux) representing the commune, arrondissement, and department respectively; but their functions are mainly deliberative, the practical administrative authority resting with the prefect who represents the central executive in the department, and the subprefect in the arrondissement. The senate is elected indirectly by a body composed of deputies and delegates from the various local councils.1

. The new territories, Alsace, etc., have been brought into line with the rest of France, making three additional departments.

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<sup>&</sup>lt;sup>4</sup> The working of this centralised system of administration along with parliamentary institutions in France is the main subject of Bodley's France (2nd ed. 1899), "the machine of administrative government constructed by Napoleon" being regarded by the author of that work as "the one great tangible result" of the Revolution in France after a hundred years (p. 203).

### 7. Public Instruction

Till 1882 the education of the people was neither compulsory nor gratuitous. The consequence was that, before the passing of the Act rendering attendance on school compulsory on all children from the end of the sixth to the end of the thirteenth year, it was estimated that about 15 per cent of the children attended no school. Under the present law primary education is imparted in the communal schools to children of seven years old and upwards; secondary education, whether "classical" or "modern," is given in lycées or collèges, while the higher education is dealt with by facultés which mostly have their seats in the sixteen "academies."

There are in France no universities like those of other European states. The whole system of education, as organised by the state in the three orders or stages just mentioned, forms what is called the University of France, which is under the control of the minister of education, assisted by a superior council of public instruction. Under the control of this body there are also the Collège de France, in connection with which are a large number of free courses of lectures in the sphere of the higher education, the museum of natural history. the observatory, etc., the École normale supérieure which has the training of teachers for classical education, and various Écoles for advanced study. Other ministries administer institutions devoted to professional, technical, and commercial instruction. The Institute of France, comprising the French Academy, the Academies of Sciences, of Inscriptions and Belles-lettres, of Moral and Political Sciences, and of the Fine Arts, is the highest of all the intellectual institutions of the country.

### 8. Agriculture

In the variety, abundance, and value of its agricultural products, France surpasses all other countries in Europe. This fact is largely due to two circumstances: the first, its favourable position with regard to the climatic zones of the westerly Atlantic winds in the north and of winter rains in the south; and the second, the fundamental physical condition that the country comprises alluviumfilled basins set round the Central Massif. In the amount of its wheat production it is exceeded only by the United States and Russia; it equals the combined total of Germany and Italy. Besides wheat, France produces all other English grains—in particular, oats, and in addition to these, maize, as well as the inferior grains of rye, buckwheat, and millet. The vine, the most valuable of all French crops, still covers an area of four and a half million acres, even though more than two million acres of vines have been destroyed by the phylloxera. The total production is by far the largest in the world, being well over 1100 million gallons. In respect of quantity, the leading departments are Hérault, Gironde, Aude, Gard, Gers, Pyrénées-Orientales, Saône-et-Loire, Puy-de-Dôme, Maine-et-Loire, and Côte-d'Or; but the most celebrated vintages are those of Médoc, the district on the left bank of the Gironde below Bordeaux, producing the wines called by us clarets (Château-Margaux, Château-Lafitte, Château-Latour, etc.), those of Burgundy produced on the eastern slopes of the Côte-d'Or (above and around Dijon, Nuits, Beaune), and those of Champagne, produced chiefly on the western and higher section of the chalk downs of that region, but on their eastern slopes overlooking the plains from Reims by Verzy and Epernay to The cultivation of sugar-beet is largely pursued Vertus.

in the northern departments. Colza, hemp, flax, and hops are also important northern products, and tobacco is grown under government direction and as a source of state revenue in the departments of Dordogne, Isère, Lot, Lot-et-Garonne, and a few others. The silkworm is reared in nearly the whole of the French part of the Rhone valley, and in the valley between the Pyrenees and the Central Plateau. The olive is cultivated in the same districts, but does not reach so far west or north reaching in the west only to Toulouse, in the north, as already indicated, only a short distance above the Isère. Chestnuts, figs, almonds, and other southern fruits are also grown, and even the orange produces its fruit on a small maritime strip between the Aude and the Pyrenees, and another in the extreme south-east under the shelter of the Alps beyond the reach of the mistral.

# 9. Manufactures

As a manufacturing country France has always held a high place. Among textile industries that which employs the greatest number of people is the manufacture of cotton, but this industry is not characteristically French. It works mainly for the home market, and has difficulty in competing with English products even under the protection of differential tariffs in French possessions, not to mention neutral markets. It has three chief seats, where the industry has been localised from different causes. One is in the suburbs of Rouen and in other places in Normandy, where the industry was started upwards of a hundred years ago through the introduction of the raw cotton from America <sup>1</sup> at the port of Havre, and has been handed down from father to son ever since.

<sup>1</sup> First from the West Indies, afterwards from the United States.

Another is in the department du Nord, where the chief French coal-field has in the present century developed textile industries in greater variety and to a greater extent than anywhere else in France. The third is in the towns at the base of the Vosges (Épinal, St. Dié, Remirement, Senones, Belfort), where water-power is largely used by the mills, and to which, since the construction of the Tancarville Canal, a line of water-ways conveys the raw material from Havre. In this last district the industry developed with great rapidity since the transference to Germany of the older seats of the French cotton industry east of the Vosges. These older cotton towns are now again French. Next in importance, at least in northern France, is the woollen industry, for which France has long been justly renowned. It is still practised largely at Elbeuf and Louviers on the Seine in Normandy, which have been celebrated for their fine woollens since the days of Colbert, but under the influence of local supplies of coal has, like the cotton industry, developed in recent years to a much greater extent in the north (at Lille, Tourcoing, Roubaix, Sedan, Fourmies, etc.).

Silk is manufactured in Lyons, St. Etienne, Paris, Nîmes, and Valence. The industry has existed in France since the introduction of the silkworm into the Dauphiné in 1440, but it has flourished only since the settlement at Lyons of some Milanese silkweavers by Francis I. after his conquest of Milan in 1515—one of the few good results to set against the many evils ensuing on the French invasions of Italy at the end of the fifteenth and beginning of the sixteenth century. It is still in a large measure a domestic industry, and it is noteworthy that both at Lyons and St. Etienne, one of the most recent applications of science

to industry has tended to confirm this character instead of as usual destroying it. At Lyons the water-power of the Rhone, at St. Etienne that of the Loire, has been utilised for the development of electromotive force which is distributed to small factories and domestic looms within a considerable radius, at St. Etienne as much as 30 miles, adding to the output of each loom and enabling workmen incapacitated by age to return to their employment. At St. Etienne, it may be mentioned, the manufacture of silk ribbons is a specialty. Among other notable French manufactures are lace, including the famous Valenciennes, Alencon, Bayeux, and Caen varieties; leather, especially patent-leather goods and gloves. For gloves, both dog and rat skin as well as kid are employed, chiefly at Grenoble and most of the neighbouring villages. Paris saddlery and harness are much esteemed, as are also the paper goods, including the universally celebrated French playing cards. Excellent terra-cotta, faïence, and porcelain ware are produced in Sèvres, Limoges, and Rouen, while the glass-works have attained to the highest development.

France also produces furniture, soap, perfumery, clocks, gold, silver, and bronze wares, the so-called articles de Paris (Paris fancy goods), besides iron, steel, copper, brass, tin, wooden wares, and chemicals in large quantities. Important also is the beet-sugar industry, and of late years the beer trade, together with the excellent French liqueurs and brandies. In the preparation of essences France surpasses all other countries.

# 10. Paris

Like other parts of western Europe, France is inhabited by a mixed people descended from numerous tribes who occupied different parts of it, or who at different times have invaded it and settled in greater or less numbers

within its borders. Broken up into a number of practically independent lordships in feudal times, it was only slowly and with difficulty pieced together again. Yet through all these changes the continuity of the life of the people is strikingly shown in various ways. The language which the inhabitants acquired during the five centuries of Roman rule remains the language to this day. Invasions of Teutonic Burgundians, Goths, and Franks have left little trace on the elements of the language, though they no doubt hastened and exaggerated the process of corruption by which Latin has become French. Probably none of these invaders were very numerous, not even the Franks who gave name to the country, and even after these invasions and the destruction of the western Roman empire the influence of Rome and its language still survived in this region through the Church. Frankish Gaul was still a bulwark of Mediterranean civilisation, which was afterwards spread from France over Germany. The continuity of life is likewise shown by the persistence of the ancient towns on the sites which they occupied in Roman times, as well as by the persistence of the names by which they are called. True, these names have been corrupted, but only as the language has been transformed. Changes following the same laws that have made Latin words into French, have altered the names of most of the ancient Roman towns to their modern forms. And in many cases the continuity of French history is only the more clearly indicated by the fact that the names thus preserved are not official names deliberately imposed by the Roman conquerors, but tribal names which may have always been those in popular use, and often had already completely superseded the official names in Roman times. In the south-east, where Greek influence and colonisation preceded those of Rome by

centuries, names adopted or bestowed by the Greeks still persist in Marseilles (Massalia, the Roman Massilia), Agde (Agathe), Antibes (Antipolis), and Nice (Nikaia), as well as, beyond political France, in Monaco (Monoikos).

Roman civilisation inevitably penetrated Gaul from the south-east, and hence the principal towns of Roman times were in the basin of the Rhone. But even before the overthrow of the Roman empire the city, whose site is marked out by nature for that of the capital of France, as that of London is for the capital of England, had begun to show signs of its future importance. As early as 53 B.C. Paris 1 (Lutetia Parisiorum), the city of the Parisii, had been designated by Julius Cæsar after the third Belgic war as a meeting-place for the Gauls on account of its situation between the two hostile tribes of the Carnuti and Senones. The city began on a small island which Cæsar says was connected with the banks by two bridges. This island, now known as the Île de la Cité, and dominated by the Cathedral of Notre Dame, was first made an official residence by the amiable and capable Constantius Chlorus about the end of the third century A.D. Some sixty years later Julian made it his headquarters during his short administration of Gaul, and afterwards looked back upon it with peculiar affection when the licentiousness and corruption of Antioch brought back to his mind the severe and simple manners of the Parisians. The insular position of the early settlement not merely facilitated defence, but also by dividing the river into two arms, each of course narrower than the main

<sup>&</sup>lt;sup>1</sup> (Paris), pop. (1851), 1,053,000; (1872), 1,852,000; (1891), 2,448,000; (1911), 2,888,000; (1921), 2,906,500. At the beginning of the fourteenth century Paris is estimated to have had a population of about 240,000, and towards the end of the sixteenth (before the siege by Henry IV.) about 400,000 (Levasseur).

stream, rendered it more easy to bridge. Under the Romans two wooden bridges made the island accessible, and the southern bank of the river was also occupied by buildings, though the northern bank was still overspread with forest. On the left bank were built a palace, theatre, temple, and baths. This town, on the south side an early beginning of city life, was later destroyed by the barbarians, and the debris of the buildings was used for defensive walls on the island.

The Île de la Cité unquestionably determined the precise situation of the original nucleus of Paris, but many other circumstances concurred to promote the growth of the city. It stands, as we have seen, on the most important of all French water-ways; but it stands, moreover, just below the confluence of another waterway, the Marne, even more important than that of the upper Seine, one that still, with its supplementary canals, forms a valuable means of transit to the east, even in competition with railways. This confluence must have contributed greatly to the importance of the growing city of the Seine island, but it is possible that that city might have had a powerful and even successful rival lower down, at the confluence of the Oise, the river that marks the line of communication by way of the valleys of the Sambre and Meuse, with Cologne and the north German plain, had it not been that just below the Île de la Cité there begin those larger loops of the Seine that make of that river such a long and devious channel. That lower site would have enjoyed equally with that of Paris all the other advantages of the Seine-Marne confluence. Both lie about the middle of the northern plain within a small area, towards which converge all the routes from the Rhone basin marked out by the valleys of the



PARIS: L'ILE DE LA CITÉ.

Marne, the Aube, the Seine, the Armançon, and the Yonne, as well as those from the heart of the Central Massive by the valleys of the Loire and the Allier, the middle Loire, after the union of the two head-streams, pointing direct to this part of the Seine. Apart from other circumstances, the lower of the two sites would have been an even more convenient crossing-place of the Seine than the higher for the route leading from the south-west of France, by the passage of Poitou and the city of Tours, to the German plain by the well-marked line already indicated. The preponderance of advantages as between these two was on the side of Paris, and no other part of France could pretend to rivalry. Hence it was that Paris, when once the whole country had been brought to the same stage of civilisation, speedily manifested the political and commercial importance of its situation, though it was long before it grew into a great town. Historically the power of the city grew with the growth of the centralising authority of the kings of the house of Capet. At the beginning of the thirteenth century it was greatly extended by Philip Augustus. He built the first Louvre, and founded the University (1220), and till long after that time Paris was composed of La Cité, occupying the islands of the Seine, La Ville on the right bank, and L'Université on the left bank of the river. On the north he girt the town with a line of fortifications, and though these were demolished by Louis XIV., they are still marked by the Grands Boulevards. On both banks of the river another line, known as the Outer Boulevards, marks the old octroi barrier, where municipal dues were collected till, in 1860, Napoleon III. extended the city to the walls erected in 1840.

These walls for long formed the limits of the city,

but not those of the urban population, for, except where in the west a portion of the area between the walls and a loop of the Seine is occupied by the Bois de Boulogne, they are closely surrounded by a ring of suburbs, and Greater Paris, answering to Greater London, may fairly be said to extend beyond even the department of the Seine, measuring 16 miles from north to south and from east to west, and numbering, at the census of 1896, a population of 3,300,000, and in 1921, 4,500,000. The fortifications of 1840 and the zone without the wall occupied by temporary buildings are being removed.

"There it lies, the large and splendid city, in the broad basin traversed by the Seine, encircled by heights, from the summit of which one looks down upon a sea of houses, overlooked in the west by the lofty dome surmounting the fine large Hôtel des Invalides, in the middle by the two high towers of the principal church, the cathedral of Notre Dame, and at all ends and corners by the turrets, pinnacles, and gables of beautiful buildings. We will make our entrance in thought from the west, where the Seine, after traversing the town, describes a large semicircle to the north. There, between the river and the town, lies the charming Bois de Boulogne, the resort in fine weather of all the wealth and elegance of the Parisian world. Having lingered a while amidst the splendour and gaiety of that attractive scene, we pursue our way eastwards. There we have before us a magnificent broad, straight street, the end of which is too remote to be seen. It leads us through a splendid triumphal arch, the Arc de l'Étoile, built by the first Napoleon. Still following this route, we next pass through the Champs Elysées, a beautiful park, swarming with people, bounded on one side by the Seine, which flows along on our right. Farther on we come to the garden of the Tuileries, and then we have in front of us the extensive palace of the same name, which formed the residence of the last sovereigns of France. It stretches with its wings for a great distance along the Seine, and then unites with the Louvre, an older royal palace, the saloons of which now contain the celebrated collections of paintings, statues, and other splendid works of art. Not far from this, nearer the heart of the town, is the Palais Royal, which has long ceased to be a royal palace, but now, with its innumerable fine saloons, shops, and restaurants, is the place where thousands of residents and strangers buy the costliest that can be bought, enjoy the most exquisite delights, and spend their money on all imaginable pleasures. . . .

"Still proceeding eastwards, we pass along the banks of the Seine, with rows of the finest houses on our left, and then we turn to the right across one of the many handsome bridges, and now find ourselves on the Île de la Cité, with the church of Notre Dame and its two beautiful but unfinished towers. We continue our way to the opposite bank of the river, where the smaller half of the city extends. On this side we find the splendid building where the deputies of the people used to assemble, that in which the Invalides (the wounded veterans of the French army) are so nobly housed, and the enormous parade-ground called the Champ de Mars. If, however, we return from Notre Dame to the north side of the river we may visit the municipal building, the Hôtel de Ville, where so many revolutions, and among others the last, have had their birth; then the Place de la Bastille, where the old royal dungeon once stood; and the Place Vendôme, in which stands the bronze column surmounted by the bronze statue of the first Napoleon. A staircase leads up the interior of this column, from the top of which one has a bird's-eye view of the splendid town. Around the column the victories of the great conqueror are represented in half-relief. All these wanderings have led us also across the boulevards, beautiful wide avenues, with handsome houses on both sides, partly occupying the sites of old ramparts, partly new, laid out by the last Napoleon, and intersecting the city in all directions. If such is the beauty within the town, especially since it was cleansed by the last Napoleon of a large number of narrow dirty lanes, in place of which broad, straight, airy streets have been constructed, on the outside of the town there are not wanting signs of the military character of the place. The whole town is surrounded by a wall and moat, and is accordingly a gigantic fortress. . . . Round it lie a number of independent forts, of which Mont Valérien is the most important and the highest. . . . Then if we have a mind we can also make a subterranean ramble under the streets among the catacombs—that is, the old quarries from which building materials have been derived for more than a millennium, and which at the same time contain in orderly arrangement the millions of bones of previous generations, which have been piled up there layer above layer since the abolition of the burial-places within the town. Among the cemeteries of the present day we may visit the beautiful Père Lachaise, where many celebrated men now rest; and among other pleasant resorts we may wander through the large and beautiful botanic garden, Jardin des Plantes, which also contains a zoological collection and several museums. Outside the walls we may visit on the north St. Denis, formerly the burial-place of the French kings; on the west the palace and garden of St. Cloud, the favourite residence of the Napoleons; on

the south the splendid palace of Versailles, with its equally splendid garden and celebrated fountains, and lastly, still farther south, the palace of Fontainebleau in a charming wood. That is Paris, the capital of France even in this sense, that the whole of France has accustomed itself for two centuries to be governed from that centre, and to follow every movement that originated there, whether it leads to revolution, to monarchy, to imperialism, or to republicanism.

#### 11. Paris as a Port

Paris, like most capital cities, has numerous manufactures; these are localised—in Marais, leather goods; St. Marcel, chemical products; St. Antoine, timber goods; St. Martin, metal goods; Clichy, jams and confectionery are made. But Paris is unique as a port: its total tonnage exceeds that of any other port in France; yet but a minute proportion comes or goes directly overseas. Along the meandering Seine, within the city  $7\frac{1}{2}$  miles in length, and in the suburbs, and on the canals of St. Martin, St. Denis, and the Ourcq, are wharves and warehouses for over 15,000,000 tons of commodities transported by boats and not by ships, and handled by primitive methods such as are only found in the smallest of seaports. The traffic is as localised as the factories: this group of wharves specialises in wines; the next in coal and timber; another in casks and petrol; yet a fourth in grain, sugar, and preserves; and others in coal and builders' debris, coal and raw materials; and almost everywhere building materials for new buildings in the immediate vicinity. These wharves are not usually served by the railways, and motor transport is necessary through the The Marne Canal will serve two aims: it will streets.

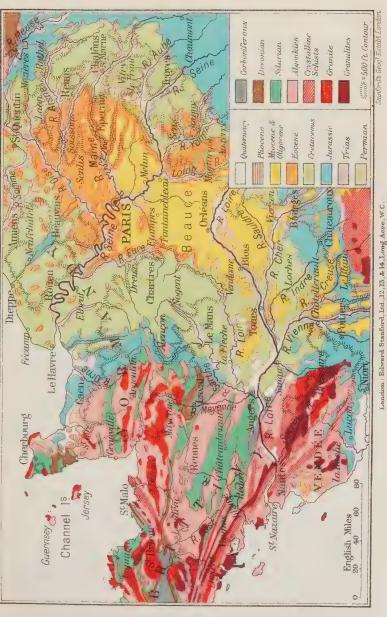
help to reduce the danger from floods by tapping and regulating the waters of the Marne, and it will bring Sarre coal and Lorraine minette iron-ore direct from the recently acquired territories in the east to Paris, into new basins at Gennevilliers west of the city. The total length of the water-ways of the port exceeds 40 miles. A third of the imports consists of coal and nearly a half of building materials, while nearly two-thirds of the exports are builders' debris and refuse. Foodstuffs and raw materials form a small fraction of the total tonnage, and Parisian products, of small bulk but high value, are exported by railway. The port itself and the character of its traffic are a product of the city's progress, and some Parisians see visions of a future seaport where sea-going vessels can bring English coal, American grain and oil, timber and wood-pulp, and a host of miscellaneous goods to the gates of Paris, thence to be transhipped throughout Central Europe by a magnificent railway system radiating from the city.

Such a possibility depends on the canalisation of the Seine and involves a consideration of the unique characteristics of the Paris basin.

## 12. The Paris Basin

The basic foundations of the Paris basin, some thousands of feet below the present surface, are primary rocks similar to those which are emergent as four remnants of the Block Mountains of Europe on the margins of the basin; these emergent masses are the peneplains of Armorica, the Ardennes, the Central Massif, and the Vosges. The bordering heights have been elevated while the intervening area has been depressed, and during the ebb and flow of the earth's water cover during its geological

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history, bed after bed of stratified rocks has been laid almost horizontally in this hollow; the remnants of these beds as we know them are the formative elements of the Paris basin. The edges of these beds are most completely exposed on the east, and are completely hidden under a chalk layer in the north along the Normandy-Picardy saddle. Being of different texture the exposed outcrops are scarp or trough according to their toughness; the north-south grain of the basin edge dominates the area between Paris and the Vosges. basin challenges comparison with the Thames basin, from which it differs in that it is more completely of basin form; the Oxford clay vales and the Chiltern and Cotswold ridges and scarps resemble in their origin and erosion features the eastern margin of the Paris basin. In the English example the grain of the land has caused the Thames basin to comprise the Oxford basin of the Upper Thames and the London basin of the Lower Thames.

In France, however, the present surface and the existing rivers are due to denudation which has been controlled by more dominant factors than the grain of the land. The Seine cuts through the northern saddle, and, on a larger scale, produces the pattern of the Arun or Adur emerging to the English Channel from the Weald beyond the South Downs. The Yonne-Seine is almost a direct line downhill from the heights of Morvan to Havre; this water-way receives merely short affluents on the left, but torrents of water by the Armançon, Upper Seine, Marne and Oise, with their tributaries, from the right.

The Paris basin comprises much more than the valley of the Seine; other great rivers begin with it and escape on one flank or the other to mouths in the North Sea or the Bay of Biscay. The Thames basin has no outgoing streams of this character. The Meuse and Moselle escape,

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for example, through the Ardennes-Eifel-Hunsrück mountain block. The Loire above Orleans, the Cher, Indre, and Vienne, roughly parallel to the Yonne and Upper Seine, are joined through the Loire trench between Saumur and Orleans, a late development; the Mayenne, Sarthe, Loir group of streams, with the Middle Loire, cut through the Armorican peneplain as an outlet from the Paris basin.

Like the London basin, the Paris basin is doomed to an agricultural and commercial development. Any minerals there may be are too deep for exploitation, so the basin has no coalfields, and no industrial areas such as Lancashire or central Belgium developed on a coalfield. The drainage system and the contours of the basin controlled the commercial development by concentrating the energy of the area upon the city of Paris; the grain of the land controlled the diversity of farming occupations. The less resistant clay belts, as in Wet Champagne, give rise to marsh and woodland; the harder chalk or limestone belts form scarps on their outer edge, where are vineyards, as in Dry Champagne, and fertile loamy soils on their inner slopes, which yield good returns to careful tillage. The streams cut through the scarps at gaps and here provide sites for settlements, e.g. Reims, Epernay, Vitry le François; their confluences on the floor of the clay vales attracted settlers, e.g. Lunéville. Rivers like the Bar and the upper Meuse meander capriciously across a valley floor which is too large for the present streams, an indication that the existing contours are due to an erosion by more powerful rivers than are now visible.

Diversity of soil and aspect meant diversity of products, which enforced trade. Trade meant transport and the use of water-ways. Transport meant a central authority, and the water-ways led to Paris.

#### 13. The Towns of the Paris Basin

East of Paris on the Marne stands Meaux, anciently the capital of the Meldi, the seat of a bishopric suffragan to Paris, founded by St. Saintin in the fourth century. Higher up we come to Châlons-sur-Marne, once the capital of the Catalauni, situated in the middle of the Campi Catalaunii, the plains stretching between the Forest of Argonne and the chalk table-lands in the west of Champagne, and still higher Langres, the ancient Civitas Lingonum, situated on a hill on the left bank commanding the source of the river, and defending the entrance to the basin of the Seine from the south of the Vosges by way of Vesoul, now consequently a fortress of the first class, and anciently also having a like strategic importance, in 301 scene of the repulse of the Alemanni by Constantius Chlorus. On the Seine, formerly at the head of its navigation, now at the end of a second-class canal communicating with the river at the confluence of the Aube, stands Troyes, the ancient Augustobona, afterwards Trecæ, the capital of the Trecasses, in the middle of the plain of the Champagne Pouilleuse at a point where the Seine divides into several arms; the seat of a bishop from the fifth century; in the Middle Ages a seat of important fairs, long noted for its manufactures of woollens and leather, which since the middle of the nineteenth century have been replaced by that of hosiery. To the west of Troyes on the Yonne, partly on its right bank, partly on an island in the river, stands Sens, the ancient Agedincum or Agendicum, afterwards Senones,

<sup>&</sup>lt;sup>1</sup> (Troyes), pop. (1851), 27,400; (1872), 38,100; (1891), 50,300; (1921), 55,000.

from the people whose capital it was, in early times a powerful tribe whose sway extended as far as Paris, Meaux, Troyes, and Auxerre, and from among whom Brennus led the Gaulish hordes who invaded Italy and terrified and insulted Rome at the beginning of the fourth century B.C. It was adorned by the Romans with splendid buildings, and made by Gratian capital of Lugdunensis quarta, and hence became the seat of an archbishop, but it inevitably declined as Paris rose. Higher up on the same river lies Auxerre, the ancient capital of the Autissiodori, a bishopric from the fourth century, still possessing remains of walls of the time of the Romans and the Middle Ages. Here also may be mentioned Autun, the ancient Augustodunum, which, though belonging to the basin of the Loire, has always derived its importance from its situation on the road connecting Châlon-sur-Saône with the valleys of the Yonne and Seine. It is finely situated at three elevations on the side of a bill belonging to the Côte d'Or. washed at its base by the Arroux, and appears to have been a Roman foundation, the older capital of the Ædui, Bibracte ("beaver-town"), surviving in the small town of Beuvray on the Morvan, 12 miles to the west. Autun early became the seat of a bishop, but has lost much of its former importance, no doubt in consequence of the rise of the Dijon route across the plateau of Langres. On the Aisne, a tributary of the Oise, northeast of Paris, stands Soissons, the capital of the Suessiones. and farther east on its tributary the Vesle, Reims, the city of the Remi, now the chief city of Haute Champagne. from an early date seat of an archbishop, long celebrated as the place where the kings of France were crowned.

 $<sup>^{1}</sup>$  (Reims), pop. (1851), 45,800 ; (1872), 72,000 ; (1891), 104,200 ; (1921), 77,000.

A southerly, slightly westerly route from Paris takes us to Orléans, anciently the capital of the Aureliani, an important crossing-place of the Loire at the most northerly point of that river. Crossing the river here one proceeds farther south into a more westerly valley of the Central Plateau, that of the Cher, with the industrial town of Montluçon. This town has no ancient



ORLÉANS: THE PLACE MATRON.

representative, but before reaching it one passes Bourges, anciently the capital of the Bituriges, a town that still-remains the most important in Berry, probably in consequence of the fertility of its well-watered verdant valley traversed by the Yèvre and other small feeders of the Cher, though west of it one might have expected a more important town to grow up at Vierzon at the crossing of the Cher, now the railway junction for Limoges.<sup>2</sup>

 $<sup>^{1}</sup>$  (Orléans), pop. (1851), 47,400 ; (1872), 49,000 ; (1891), 63,700 ; (1921), 69,000.

<sup>&</sup>lt;sup>2</sup> (Limoges), pop. (1851), 41,600; (1872), 55,100; (1891), 72,700; (1921), 90,000. See above, p. 285.

Proceeding south-westwards from Paris, one may cross the Loire at Blois, which, though first mentioned under the name of Blesæ by Gregory of Tours (end of sixth century), is proclaimed a Roman town by remains of a Roman aqueduct and a Roman road. Its castle, which, in its present form, dates mainly from 1498, when it was reconstructed by Louis XII., a native of Blois, but received considerable additions from his successor, Francis I., is now a museum. But if one does not cross the Loire at Blois, one may continue one's road from Paris for 125 miles in a direct line, without crossing any considerable stream, and then, below the heights of St. Symphorien, one crosses the Loire to Tours, anciently the capital of the Turones. Of this town Cæsar makes no mention, though he speaks of the tribe from which it takes its name. There are here, moreover, no undoubted Roman remains, and yet it must have been a place of some importance in Roman times, inasmuch as roads converged here from Orléans, Bourges, Angers, and Poitiers. Angers,<sup>2</sup> the town situated two or three miles from the Loire on the Maine, just below where that river is formed by the union of the Sarthe (reinforced by the Loire) and the Mayenne, was anciently known as Juliomagus, but still bears witness in its present name to the fact that it was in former days the capital of the Andecavi.

# 14. The Normandy-Picardy Saddle

Chalk uplands fringing the Channel coast drained by the Arne, Bethune, and the larger Somme, and terminating in the north-east in the Heights of Artois with Cape Gris

<sup>&</sup>lt;sup>1</sup> (Tours), pop. (1851), 33,500; (1872), 43,400; (1891), 60,300; (1921), 75,000. Estimated to have contained about the end of the sixteenth century at least 80,000 inhabitants, at the end of the seventeenth, fifteen years after the revocation of the edict of Nantes, only 33,000 (Guilbert).

<sup>2</sup> (Angers), pop. (1891), 64,600; (1921), 86,000.

Nez, and cut by the lower Seine, form a saddle overlying the stratified layers of the Paris basin in the north-west.

The Somme valley accounts for the development of Amiens, which repeats in miniature the commanding position of a centralising town in a river basin so supremely exemplified by Paris. The Somme differs from the Seine, however, in that Havre and Rouen both in the cut of the lower Seine have no counterpart in the lower Somme. In some respects Picardy is the French equivalent of East Anglia. Dieppe and Boulogne are both cross-channel ferry towns on the Picardy coast; the whole district lies athwart the railway routes connecting London with Paris.

#### 15. French Flanders

Between the Heights of Artois and Belgium, practically the whole of the department of Nord, lies French Flanders, geographically one with North-Belgium, the beginning of the Great Plain of Europe. Here are the French section of the Belgian coalfield and the industrial towns of Lille, Roubaix, Tourcoing, and the ports of Calais and Dunkirk. Here also is the edge of the chief wheat and sugar-beet growing area of France, which extends away towards Paris.

Flanders has waterway connections with the Belgian rivers and with the Paris basin by the Oise.

# 16. Normandy and the North

West Normandy belongs to the Armorican peneplain which is described under Brittany. Between Avranches and Lille the traveller passes through three geographical divisions of France which have had different histories and are parts of different French provinces. The Bocage Normand is granitic and Armorican, the pays de caux or chalk downs occur in Normandy and Picardy.

The peninsula of Cotentin, which forms the western buttress of Normandy, has on the west an inhospitable coast, the harbours of which are generally small and obstructed by reefs. A line of rocky cliffs trending on one side south-east from the Cape de la Hague and on the other south-west from the Pointe de Barfleur to the bay on which now lies the naval harbour of Cherbourg, forms the north coast. On the east the coast gradually sinks in height towards the south. To the east of this peninsula the Baie de la Seine forms a broad bight in the coast-line, along which, at some 5 miles from the shore, runs for a distance of about 25 miles the dangerous reef of the Calvados, which owes its name, now conferred also on the adjoining department, to the fact of a vessel so called, belonging to the Spanish Armada, having been wrecked there. In the eastern angle of this bay a deep estuary marks the mouth of the Seine. On this picturesque coast lie the much-frequented watering-places of Trouville-sur-mer, Deauville, adjoining one another on opposite sides of the mouth of the Touques on the south side of the estuary of the Seine facing the port of Hâvre, and north of the Seine lies that of Étretat, occupying a gap between fine cliffs rising to the height of nearly 300 feet.

Normandy is one of those lands over which history and poetry have thrown a halo of beauty and romance. And yet the Normandy of to-day is not especially romantic, if we except, perhaps, the strips of rocky coast lashed by the Atlantic surf. The land, watered by the tranquil Seine, is pleasantly varied by undulating hills and dales. Here are no frowning mountains, no extensive

and sombre woodlands; all is light and cheerful, carefully tilled, and green and smooth, with few villages, but everywhere interspersed with shady little groves temptingly inviting the wayfarer to explore their coy recesses. On a nearer approach we find an earthen wall, often planted with a double row of beech, maple, or alder-trees, concealing a large grassy sward planted with fruit-trees, amidst which graze a magnificent breed of cattle in close proximity to the neat, well-constructed farmstead. The hilly woodland country of Calvados, known as the Norman *Bocage*, is cut off by river valleys from somewhat higher ground to the south-east, where in the Forêt d'Écouves, near Alençon, the Avaloirs rise to the height of 1370 feet.

Much of the coast of Normandy and north-eastern France consists of calcareous strata, of Jurassic and Cretaceous age, which are worn by marine action into sweeping outlines, giving to the coast-line a succession of flowing curves, well illustrated between Havre and Dieppe, and onwards from Upper Normandy into the north-eastern departments.

Passing from Upper Normandy into Picardy, the resemblance becomes more marked between the rocks of the French coast and those of the opposite coast of Britain. The *Manche*, or Channel, here narrows to the *Pas de Calais*, or Strait of Dover, which has been formed partly by marine erosion and partly by subsidence of the land. The rocks of the Weald of Kent and Sussex were evidently at one time continuous with those of the Bas Boulonnais.

Along the coast of the department of Pas de Calais there has been considerable gain of land at certain points, while elsewhere the sea has encroached. Deposits of silt have been largely formed near the mouth of the Somme, and have also added new land near Cape Gris-

Nez. The inhabitants of the seaboard of the north of France have not been slow in reclaiming land, and protecting it by means of dykes, after the manner of the Dutch.

#### 17. The Towns of the North

Below Paris, at the top of one of the lower loops of the Seine, stands Rouen, the ancient Rotomagum, capital of the Veliocassi, which has been a city of importance since the time when it was made the seat of a bishop by St. Mellon, immediately after the Christianisation of the region, as well as seat of administration of Gallia Lugdunensis secunda. The Roman seaport of Juliobona, at the head of a lower loop of the river, has now decayed, and its site, occupied by Lillebonne, which has remains of a Roman theatre and hot baths, is no longer on the Seine.

In the north, midway between Paris and Calais, at the crossing of the Somme, which here breaks up into eleven channels, stands Amiens,<sup>3</sup> the ancient capital of the Ambiani, and still farther north on the Lys there formerly stood another important town, the ancient Tarvanna or Tervanna (that is, Terwanna), which flourished till the time of its ruthless destruction by Charles V. in 1553, but is now reduced to the little village of Thérouanne, occupying the south-east of an embanked enclosure marking the outline of the old town. Now the chief towns on the north frontier are the seats of industry described elswhere.

Lille, on the little river Deule, was fortified, and is the chief industrial centre of French Flanders. Some seventeenth- and eighteenth-century buildings exist, but

¹ (Rouen), pop. (1851), 100,300; (1872), 102,500; (1891), 112,400; (1921), 124,000.

<sup>&</sup>lt;sup>2</sup> In the accusative, from which modern French nouns are derived.

<sup>&</sup>lt;sup>3</sup> (Amiens), pop. (1851), 52,100; (1872), 63,700; (1891), 83,700; (1921), 93,000.

the town is mainly of recent growth. Founded in the eleventh century, the town suffered many vicissitudes before it finally became French. It was in German hands during the Great War, when the inhabitants suffered great privations. Havre, the chief seaport of the north, at the mouth of the Seine, owes its ancient name Havre de Grâce to the chapel of Notre Dame de Grâce, founded by Louis XII. in 1509. The harbour was largely developed by Richelieu and Colbert, and owes much to the trade with North America in cotton, cereals, and timber. There are shipbuilding and engineering yards, oil refineries, tobacco and chemical works. Calais, the chief of the ferry stations of the English Channel, owes its rise to the traffic with England, and the lace manufacture introduced a century ago. The old town and citadel are separated from the suburbs by the harbours, docks, and canals.

#### 18. The Lorraine Saddle

The two sections of Lorraine, now reunited, belong to the Paris basin; old Lorraine includes the zones east of the Argonne forest, including the valleys of the Meuse, Meurthe, and Moselle; it includes the clay belt of the Woëvre and the heights near Verdun. New Lorraine, for the period 1871–1919 in Germany, comprises the saddle between the Hunsrück and the Vosges. In the north is the valley of the Sarre with its coalfield, in the south the Col de Saverne gives connexion with Strasbourg.

#### 19. Alsace

The Vosges and Black Forest, both block mountains, face each other with steep scarps across the lowland of the middle Rhine. The valley floor, covered with alluvium, lies almost horizontally between the bounding faults,

with a gentle slope towards the north; the parallel courses of the Ill and Rhine are a measure of this level lowland. The western half of this rift valley between the Rhine and the Vosges is Alsace.

The Vosqes 1 form a mountain chain stretching for a distance of 175 miles in a north-easterly direction, from Belfort to the junction of the Nahe with the Rhine at Mainz. The whole stands out clearly from the surrounding land, although varying in height and physical aspect to such an extent that two distinct groups may be detected. The mass of the upper Vosges, where crystalline rocks of plutonic origin prevail, presents rounded crests of considerable altitude, the highest of which is the Ballon de Guebwiller, 4670 feet, whereas the lower chain of the Vosges, farther north, consists exclusively of longitudinal sandstone plateaus. The upper Vosges reach from the Ballon d'Alsace, 4085 feet, at the south-west angle of the former Franco-German frontier, as far as the parallel of Strasbourg. How well fitted by nature this range is to form an international boundary is shown by the fact that for 75 miles, from the southern end to the line of valleys followed by the railway from Strasbourg by way of Saverne (Zabern) and the Marne and Rhine Canal to Sarrebourg, it is still uncrossed by a railway, though several railways ascend the deep valleys both on the French and German side, one from Strasbourg up the valley of the Breusch nearly reaching the frontier.

#### 20. Towns of Alsace and Lorraine

The chief towns of the Rhine valley include Saverne, in German Zabern, both modified forms of the Latin Tabernæ, on the Zarn, at the base of the Vosges; Stras-

<sup>1</sup> In German Vogesen, Wasgau, or Wasgen.

bourg, on the Ill, only a mile or two from the main stream; Schlettstadt, Colmar, and Mulhouse, all on the same river—Schlettstadt near the mouth of the valley of the Leberach; Colmar near that of the Fecht; and Mulhouse at the edge of the hills of the Sundgau, at the mouth of the line of valleys traversed by the Rhone and Rhine canal. At all times the most important of these towns has been Strasbourg,1 the Roman Argentoratum, situated in a remarkably fertile and well-watered plain, where the Ill is joined by the Breusch. This valley affords an easy ascent to the crest of the central Vosges, and receives several roads from the French side of those mountains, causing them to converge upon Strasbourg, so that the name of the town, meaning "the castle by the road," is easily understood. At the present day this valley is ascended by a railway to its head. A railway bridge and a bridge for ordinary traffic connect

<sup>1</sup> (Strasbourg), pop. (1827), 50,000; (1871), 85,700; (1880), 104,500; (1890), 123,500; (1921), 167,000.

Strasbourg is one of those places for which the rcco:ds of a census held towards the close of the Middle Ages (about 1475) have come down to us, thus furnishing a more or less definite standard by which to estimate the magnitude of other leading towns of the time. The result at that date was only 14,809. See Jastrow, Die Volkszahl deutscher Städte zu Ende des Mittelalters (Berlin, 1886), p. 13, and notice of this work in Petermanns Mitteil., 1886, Litteraturbericht, pp. 112, 113. About the time of the outbreak of the Thirty Years' War its population is estimated by Jastrow at 30,000.—Ibid. p. 157. The following estimates (based chiefly on baptismal and other entries in parish registers) and census returns (the latter distinguished by \*) from the same work are also of interest:—

Danzig, "legal town," 1416	*8-9,000	Leipzig, beg. 17t	h cent.	15,000
Danzig, with suburbs, 1416, abo	out 20,000	Freiberg ,,	,,	15,000
Danzig, beg. 17th cent	50,000	Munich ,,	2.9	14,000
Rostock, 1594-95	*14,900	Breslau ,,	,,	30,000
Nürnberg, 1449	*20,000	Augsburg "	11	50,000
Nürnberg, beg. 17th cent.	40-50,000	Augsburg, before	that date	,60,000
Berlin, beg. 17th cent	14,000	Frankfurt a/M.,	1387 .	10,000

STRASBOURG . KLEBERPLATZ.

it with Kehl on the opposite side of the Rhine. This position makes the town of most strategical importance, and hence it has been a stronghold from a very early date. At its south-east angle is a citadel erected by Vauban in 1682-84, and the fortifications have been strengthened since it came into the possession of the German Empire in 1871. The walls have been extended, and Strasbourg and Kehl have been surrounded by a ring of fourteen forts crowning the neighbouring heights. Since the Middle Ages Strasbourg has been noted for its cathedral, the body of which dates from 1015-1275, while the beautiful west front with the towers was erected between 1277 and 1439 from the designs of Erwin von Steinbach. Of these towers only the northern, which rises to a height of 466 feet, has been completed, and even it not according to the original design. Before the French Revolution Strasbourg was the seat of a university, and after the town again became German a new university was founded here (1872) on a magnificent scale.

Strasbourg is also an important industrial town, and so also are Colmar and Mulhouse, which, with other smaller towns in the Vosges, have long been noted as seats of the cotton industry. The situation of the latter at the margin of hill and plain supplies it with the water-power which has made it a place of "mill-houses" for more than a thousand years. It is mentioned under the form Mühlenhusen as early as 717. The cotton industry on a large scale began in 1746 with the establishment of a large factory for coloured cottons, and it was further developed through the efforts of the houses of Köchlin, Dollfus, Schlumberger, and Mieg. The town is now the seat of a well-equipped weaving school.

 $<sup>^1</sup>$  (Mulhouse), pop. (1821), 13,000 ; (1871), 52,900 ; (1880), 63,600 ; (1890), 76,900 ; (1921), 99,000.

Metz, at the junction of the Seille with the Moselle, is a railway junction of some importance, with the Saar coalfield, Sarrebruck, Sarreguemines, etc., to the northeast, and the minette ironfield, Thionville (Diedenhofen), Longwy, and Briey to the west and north-west. A famous fortress, it has expanded considerably with characteristic German buildings since 1871. As Divodurum it was a local capital in Roman times and gained the name Mettis; it was capital of Austrasia after 511, and of Lotharingia (Lorraine) after 843. It became French in 1649, and was fortified by Vauban.

Nancy on the Meurthe was the capital of Lorraine in 1870. An historic town, it contains buildings due to Stanislaus Leszcinski, the exiled king of Poland (1736), who became Duke of Lorraine; Charles III., who founded the new town, and Louis XIV., who had the old fortifications razed. There are manufactories of lace and textiles, and some iron goods. Lace and pottery are made at Toul, 14 miles to the west. The Roman Tullum Leucorum, it became, later, the seat of a bishop. Fortified first in 1552, it was fortified a second time after 1871. Toul guards an easy passage from the sharp bend of the Moselle west into the valley of the Meuse. St. Mihiel and Verdun, lower down the Meuse valley, were also fortresses, the first on the east bank and the second on the west bank of the river. Important railways between Paris and Strasbourg pass through Verdun and Toul. Verdun was a fortress within a circle of fortified hills. and it was here that the French made the heroic defence (1916-17) summarised by the statement "They shall not pass." By the treaty of Verdun 843, Charlemagne's great empire was divided. It was a Roman fortress, Verodunum, built upon a stronghold of the Gauls. Below the bridge the Meuse navigation begins; houses line the river-banks.

### 21. The Valley of the Saône and Rhone

The highlands west of the Saône are of much less height than those of the Central Plateau. They begin in the south with the *Montagnes de la Côte d'Or*, which stretch north-eastwards from the depression between the Saône and Loire to the sources of the Seine, culminating in the Bois Janson (2085 feet). They are thickly covered with vineyards on their eastern slopes towards the Saône valley, and fall gently westwards to the Arroux, a tributary of the Loire, separating them from the *Morvan Hills*, a granitic mass reaching an elevation of 2960 feet.

The Côte d'Or is followed by the plateau of Langres, an upland plain or table-land with gently undulating hills, whose northern slopes between the Seine and the Marne are mostly bare, with a bleak climate, unproductive soil, and indigent inhabitants. On the east, where rises the Meuse, this table-land is connected with the Monts de la Faucille, a flat-topped mountain ridge broken by gentle undulations, throwing off short steep spurs down to the lower Saône valley, while its long northern offshoots stretch away on both sides of the Meuse.

The Monts Faucilles close on the north a long funnel-shaped valley traversed by the Saône and the lower Rhone, and bounded on the west by the plateau of Langres, the Côte d'Or, the Monts du Lyonnais and du Vivarais, and by the Cevennes, the whole forming scarped edges of the Central Massif, and on the east by the Jura and the Alps,—a valley with an excellent climate and a fertile soil, and hence with a dense population, and consequently one of the most important parts of France. In its southern half the relations of this valley with the adjoining regions are restricted by the

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steep wall of the Cevennes on the west and the narrow tortuous valleys of the Alps and Jura generally leading up to high passes on the east, but in its northern half the facilities for communication with it are greater. Numerous streams descending from both sides of the plateau of Langres mark out easy routes connecting it with the basin of the Seine, and similar routes connecting it across the Monts Faucilles with the basin of the Meuse. These latter afford easy routes to the Seine basin also, and the route marked out by the Canal du Centre forms as easy a connection with that basin as with the basin of the Loire. The northern plain of France is thus in many ways brought into relation with the great valley of the Rhone and Saône. On the other hand, the opening on the north-east between the Vosges and the Jura forms an equally easy connection with the valley of the middle Rhine, the fertile plain stretching north and south between the Vosges and the Black Forest.

The north-east outlet, variously known as the Gap of Belfort or the Gate of Burgundy, between the valley of the middle Rhine and the sharp turn of the Doubs, contains the Pays de Montbéliard. Here dry limestone steps lead down from the Juras to the green and fertile clay vales. Here in the gateway were Roman roads, and the city of Epamanduodurum with gardens of imported cherry, plum, and peach trees. Vesontis (Besançon) became a Christian centre. Barbarians pillaged the pays, and Montbéliard became a powerful municipality in the border zone between France, Burgundy, and the Empire. A strong Protestantism added to the fierce individuality of the people, which is responsible for industrial development in the manufacture of watches, textiles, and hardwares.

# 22. Historical, Linguistic, and Commercial Relations of the Saône-Rhone Depression

ambiguous relations of the Saône-Rhone valley are curiously and interestingly illustrated in its history, its language, and its commerce. Naturally it was by this valley that the civilisation of the Mediterranean first entered the country that now forms France. conquest of Gaul by the Romans was carried out from that valley as a basis. When Gaul was divided into Roman provinces, the north-west, including nearly all the Loire valley communicating with the valley of the Saône by the passes leading from the Loire and the Seine with its tributaries, was attached under the name of Gallia Lugdunensis to the part of the great southeastern valley which had its capital at Lyons (Lugdunum). The eastern parts of the Saône Valley, however, formed part of Gallia Belgica which included most of the valley of the Meuse and extended to the Strait of Dover. In the kingdom of Lothaire formed by the treaty of Verdun after the break-up of the empire of Charlemagne the whole of this great valley, along with that of the Meuse, was included, the more westerly parts falling to Charles the Bold, and ultimately coming to form the kingdom of France. But it was long before this valley was attached to the latter kingdom. Its physical connection with central Europe was indicated in the fact that the greater part of it was attached for centuries to the German empire, though one part after another gravitated to or towards France. The duchy of Burgundy which lay mostly to the west of the Saône did not form part of the empire. Nominally it was a fief of France, though a powerful and practically independent fief till its annexation to that kingdom after the death of Charles the

Bold in 1477. Of the remaining parts of this valley Provence became detached from the empire in the thirteenth century, and Dauphiné was ceded to the French crown in the middle of the next century. But Franche Comté, the territory east of the Saône including the basin of the Doubs—that is, the territory directly communicating with Alsace through the Burgundy Gate -remained attached to the empire, or, from the time of Charles V., a Spanish or Austrian dominion, till the time of Louis XIV., the final cession taking place at the peace of Nijmegen in 1678. Before that, in the peace of Westphalia (1648), a large share of Upper with some parts of Lower Alsace had been ceded to France, which in 1680 laid claim to the whole of that territory—a claim gradually recognised by all the territorial princes, lay and ecclesiastical, in the course of the following century.

As regards language, however, the scarcely perceptible water-parting between the basins of the Rhine and Rhone in the Burgundy Gate, marks approximately a barrier between French and German which never seems to have been crossed. Notwithstanding the fact that at the time of the retrocession of Alsace to Germany in 1871, Upper Alsace with the Sundgau had been in French possession for more than two hundred years, German still remained the current speech of the people. This fact illustrates the closeness of the ties that connected the inhabitants of both banks of the Rhine between the Vosges and the Black Forest, while the endurance of the French language throughout the great south-eastern valley of France follows naturally from the fact that it was in that valley that the mother tongue of the French was first introduced, and thence that it spread over the rest of Gaul.

For commerce the outlets of this valley on the northeast, north, and north-west have all been important from a very early date, but the first that seems to have been made use of as part of a great trade route seems to have been that on the north-east. Etruscan wares are known to have been carried to the north in exchange for amber obtained in the North Sea on the west side of the peninsula of Jutland, and on the coast north-east of the mouths of the Rhine as early as the fifth or sixth century B.C. One of the routes by which these commodities were conveyed was across the Little St. Bernard Pass to the valley of the Isère, then up the Rhone, Saône, and Doubs valleys to the Burgundy Gate, and finally down the valley of the Rhine. In the earliest notices of British commerce with the Mediterranean through Gaul, the goods from Britain seem to have been brought down the western plain and then up the valley of the Garonne and through the passage of Naurouse, but from the time of Diodorus Siculus (first century B.C.) the regular route for British commerce with the southeast of France, when it has not gone entirely by sea, has been by way of the Seine and its tributaries into the upper end of this great valley. The railway route is first south-east to Dijon, before reaching which it pierces the higher part of the plateau of Langres in a tunnel, and from Dijon down the Saône and Rhone valleys. A more direct route from Marseilles to Paris crosses the Central Plateau, but this route is too difficult and costly for through traffic. For the south-west of Germany the Burgundy Gate is necessarily an important commercial route, though part of the commerce that once followed this route has been diverted to Genoa by the opening of the St. Gothard tunnel.

#### 23. The French Alps

The south-eastern frontiers of France are formed by the Pennine, the Graian, the Cottian, and the Maritime Alps. In Savoy, just within the French frontier, stands Mont Blanc, rising to the height of 15,775 feet and bearing (since 1893) an observatory at the height of 14,350 feet. Several other summits, Monte Viso. Pelvoux (13,460 feet), etc., exceed 12,000 feet in height, but as we approach the sea the average elevation declines. The principal passes in this section of the Alps are those over the Little St. Bernard (7170 feet), on the south side of Mont Blanc, leading from the valley of the Dora Baltea to that of the Isère, the pass used by the ancient Etruscans in their trade with the North Sea, and across which led the oldest of Roman Alpine roads, and that of which we have the most extensive and finest remains; that across Mont Cenis (6835 feet), from the valley of the Dora Riparia to that of the Arc, a tributary of the Isère, that which was afterwards, from the sixth century onwards, the great highway between France and Italy till it was superseded by the Alpine tunnel that takes its name from it, but which really pierces the mountains under the Pass of Fréjus, some miles distant; and the Pass of Mont Genèvre (6080 feet), leading from the same Italian valley to the valley of the Durance, and, accordingly, connecting Turin with the mouth of the Rhone valley. This pass, now practicable for carriages, was also much used in the Middle Ages. Farther south another pass, variously known as the Collo della Maddalena, Col de Larche, and (somewhat awkwardly) as the Col de l'Argentière, now also crossed by a carriage road, connects the Durance through the Ubaye valley with the valley of the Stura. The railway

tunnel above referred to connects Bardonnèche in France with Modane in Italy, and has a total length of 40,092 feet (7.59 miles), and its highest point is 4380 feet. It was opened in 1871. Though less in average height than the Alps of Switzerland, the Alps forming the boundary between France and Switzerland present in many places scenes of the wildest description, the very embodiment of rugged desolation.

This mountainous region of south-east France stretches for nearly 200 miles from the Côte d'Azur to the Lake of Geneva; it comprises two natural regions separated roughly by a line from Briançon through Corps to the Drôme entry to the Rhone depression. In the north the arrangement of the mountains is simple, the climate is to a large degree Central European and controlled by the Atlantic winds, whence comes an abundance of rain and snow, with the resultant development of glaciers and the winter sports of Chamonix. Forests clothe the slopes below the level of Alpine summer pastures; cattle-rearing is the predominant farming occupation. Water-power is largely responsible for well-developed factories in the Isère valley at Grenoble and Ugines.

In the south the mountain system is complicated by the confluence of a line of folds from the south-west, the Pyrenean fold-line, with the true Alpine line of folding. The climate is Mediterranean in type, rains are infrequent and the mistral sucks up moisture, the glaciers are small and the typical maquis vegetation is a scanty cover. Sheep thrive, but arable land requires irrigation. With a suitable aspect both olive and vines flourish. Within the mountains the higher valleys are rainier, forested, and support cattle; it is planned to utilise the waterpower for the benefit of the towns on the Côte d'Azur.

#### 24. The Mediterranean Seaboard

Mediterranean France is divided into two distinct sections—one to the east and the other to the west of the mouths of the Rhone. The eastern section presents bold cliffs along the coast, and in the character of its flora is essentially African. Distinct from the Maritime Alps on the extreme east of France are the Montagnes des Maures, with the chain of Estérel at the back, forming a conspicuous feature in the geography of Provence. Some of the most famous winter resorts are situated on this coast, such as Mentone, Nice, the little independent principality of Monaco, Cannes, and the Islands of Hyères.

Immediately west of Marseilles begin to appear the remarkable lagoons and marshes, forming a prominent feature of the entire Mediterranean seaboard as far as the Pyrenees. They lie between the mouths of the streams here reaching the coast, the Hérault, Orb, Aude, Ogly, Tet, and Tech, and occur most frequently on the large island, about 300 square miles in extent, formed by the two branches of the Rhone and the coast-line. This island, known as the Camargue, is for the most part a waste partly occupied by étangs or lagoons, the largest of which is that of Valcares, partly clothed with marshy reed-thickets, haunted by marsh-birds, including some rare and local species, partly covered with naked sand or with salt-loving shrubs; but in places affording pasture to herds of cattle, flocks of sheep, and a breed of half-wild horses; while its margin on the north-east and west is partly cultivated with vines, rye, and oats. East of the Rhone and the Arles canal is another plain of a different character, being covered with a loose deposit of water-worn stones, such as those carried down by the Rhone and Durance. This is the dreary tract

of the Crau, traversed by the Arles-Marseilles railway, in summer absolutely barren, though in winter it yields herbs which afford good grazing for sheep, and are said to render their fleece of finer staple. In the west it is now being reclaimed by deposits of rubbish brought from Marseilles, and irrigated with water from the Durance. Near Marseilles is the *Étang de Berre*, an inland sea formed by an arm of the Mediterranean, from which it is separated only by a rocky ridge.

Along the right or western bank of the Lower Rhone as far as the Pyrenees, and westwards to the Garonne, extends the fruitful province of Languedoc, which is intersected by the chain of the Cevennes, and presents for the most part a low and sandy beach, quite unlike the hold cliffs of Provence.

# 25. Towns of the Valley of the Rhone and Saône and the Mediterranean Seaboard

The facts mentioned above in sections 21 and 22 will suffice to show the necessity for some great port at the mouth of the long valley of south-eastern France. From a very remote date that port has existed in Marseilles, the Massalia of the ancient Greeks, the Massilia of the Romans, situated on the natural harbour nearest to the marshes of the Rhone delta, and hence in most direct communication with the valley. According to tradition, this city was founded by a colony of Phocæans about 600 B.C., not improbably, however, on the site of a previous Phænician settlement. Its early progress in commerce was more than once checked by the hostility of the Carthaginians, but, in alliance with the Romans,

<sup>&</sup>lt;sup>1</sup> (Marseilles), pop. (1694), 87,000; (1721, after the great plague), about 50,000; (1770), 90,000; (1872), 236,000; (1891), 404,000; (1921), 586,000.

and afterwards under Roman rule, it flourished uninterruptedly from the time when the supremacy of the Carthaginians at sea was destroyed in the first Punic war. Being the sole seaport for this valley, and thus concentrating on itself all the products of that valley and its connected regions destined for Africa, the Levant, eastern Asia, and Australia, and collecting in return the cereals of Russia and Turkey, the oil-seeds of India and Africa, the ores of Algeria, the wines and dried fruits of the Mediterranean, the rice, teas, spices, and silks of the east, it is the principal seaport in all France, the annual amount of its shipping being about double that of Havre, the second in rank. Its port has long grown beyond the limits of its natural harbour. In ancient times, however, and down to the Middle Ages, Marseilles was not the sole seaport of the Rhone valley. As long as vessels were comparatively small it had a rival in Arles, the ancient Arelate, of which there are many imposing remains, including those of a Roman amphitheatre, estimated to have been capable of holding at least 20,000 spectators.

On the bays to the east of Marseilles several colonies were founded by the Greeks of that city, but these were never rivals of Marseilles, but merely had, like their modern representatives, a local importance. Of these Tauroentum, Olbia, and Athenopolis can only be placed conjecturally, but all on bays in the western section. The name of Olbia is believed by some to survive in that of the hamlet of Eoube on the roadstead of Hyères. More famous then and since was the eastern dependency of Nikaia, now Nice, "founded on a splendid site . . . defended on all sides by natural barriers and wide open to the sea." The adjacent Monaco is only conjectured

<sup>&</sup>lt;sup>1</sup>(Nice), pop. (1872), 52,400; (1891), 88,300; (1921), 156,000.

<sup>2</sup> Hall, The Romans on the Riviera, p. 79.

to have been of the same origin from its Greek name (Monoikos), but Antibes, now renowned throughout France for its flower-gardens and its scientific horticulture, is undoubtedly of Massilian origin, and owed its Greek name of Antipolis, "opposite city," to the fact of its having been founded on the opposite promontory of the wide bay, the east end of which is occupied by Nice. Fréjus, the ancient Forum Julii, a naval station in Roman times, has meadows and gardens on the site of the ancient harbour; 1 and Toulon, 2 the ancient Telonem Martium, is the modern French naval station.

In the original Roman Provincia, besides the seaports already mentioned, Narbonne (Narbo-nem), Béziers,3 the city of the Betterrenses, Lodève (Luteva), Uzès (Ucetia), Nîmes 4 (Nemausus), Aix (Aquæ Sextiæ), Apt (Apta Julia), Digne (Dinia), Sisteron (Segustero-nem), Arles (Arelate), Avignon (Avenio-nem), Orange (Arausio-nem), Valence (Valentia), Vienne (Vienna), Grenoble 5 (Gratianopolis), Briançon (the city of the Brigantini), and others all still bear Roman names, and most of them retain their ancient importance. The most populous are Nîmes, Grenoble, Béziers, and Avignon. Nîmes, which contains the finest remains of Roman antiquity outside of Italy, the amphitheatre, the Maison Carrée, witnesses of the favour shown to the town by Augustus and the Antonines, stands on the margin of a Tertiary plain bordering the delta of the Rhone at the mouth of a Cretaceous valley leading up to the Cevennes and the

<sup>&</sup>lt;sup>1</sup> See Hall, ubi supra, plate between pp. 182 and 183.

<sup>&</sup>lt;sup>2</sup> (Toulon), pop. (1872), 60,000; (1891), 78,000; (1921), 106,000.

<sup>(1862</sup>iers), pop. (1851), 19,300; (1872), 31,500; (1891), 45,500; (1921), 56,000.

 $<sup>^4</sup>$  (Nîmes), pop. (1851), 53,600 ; (1872), 62,400 ; (1891), 71,600 ; (1921), 83,000.

<sup>&</sup>lt;sup>5</sup> (Grenoble), pop. (1851), 31,300; (1872), 42,700; (1891), 60,400; (1921), 77,000. See above, p. 294.

valley of the Allier, the route now followed by the railway through Alais to Clermont. Arignon, the residence of the popes during "the second Babylonish captivity" (1309-1376), is at the mouth of the valley of the Durance; Béziers, an inland town at the junction of railways from the west, south, north, and north-east in communication with the port of Cette; while Grenoble lies surrounded by



NÎMES: REMAINS OF THE ROMAN ARENA.

forts in an important strategic and commercial position at an angle of the Isère commanding the routes from the Mont Cenis and the Little St. Bernard, as well as the line of valleys leading mainly between the Jurassic and Cretaceous Alps southwards to the valley of the Durance. Narbonne, whose harbour had become silted up even under the Romans, but was restored by them through the diversion thither of a branch of the Aude, remained an important seaport till the fourteenth century, but has since decayed.

North of the early Roman Provincia, in the basin of the Rhone, Lyon, or, as we call it, Lyons (Lugdunum), Châlon-sur-Saône (Cabillonum), Besançon (Vesontio-nem), and Dijon (Divio-nem) are among the towns which have retained importance as well as their name since Roman times. The important confluence of Lyons<sup>1</sup> is one of



GRENOBLE AND THE CHAIN OF THE ALPS.

those situations that could not fail to be marked by a commercial centre. A town already existed here on the heights of the Croix Rousse when, about the beginning of the sixth century B.C., shortly after the foundation of Marseilles, a colony of Greeks settled there, and in 43 B.C., soon after the conquest of the valley by Julius Casar, a Roman colony was planted in the town by Munatius Plancus.<sup>2</sup> Châlon-sur-Saône was in the time of Julius

¹ (Lyons), pop. (1851), 177,200; (1872), 323,400; (1891), 438,100; (1921), 562,000.

<sup>&</sup>lt;sup>2</sup> See also above, p. 323.

Cæsar the second city of the Ædui, and became a radiating point of roads to Autun, Langres, Besançon, Lyons, and Geneva. Destroyed by the Alemanni in the third century it was restored by Probus, who then introduced the vine. It was the seat of a bishop from about the time of Constantine till 1790. Besancon, whose strong situation on a rocky peninsula, almost surrounded by the river Doubs, is described by the emperor Julian, at a time when it was only beginning to re-emerge from the ruins of a once splendid city, has its strategical importance now recognised by a citadel and a girdle of forts, while its commercial position is assured by its railway and canal communications with the valley of the Rhine and the railways into Switzerland through the defiles of the Jura. Capital since 863 of Upper Burgundy, it shared the fortunes of that territory, and passed from Spain to France only in 1678. Dijon was in Roman times only a secondary city of the Lingones, but it was made in 525 the seat of a powerful abbey founded by St. Benignus, and the capital of the duchy of Burgundy from 1179 to 1477, and has long been commercially important as the place where the principal road and chief line of railway to the basin of the Seine, as well as the Burgundy Canal, ascend from the plain of the Saône.

The supply of meat, both alive and frozen, to the industrial areas of Western Europe is largely a matter of oversea transport. In south-east France it is regulated by an ancient system of live-stock fairs which have been preserved within the valleys of the French Alps at Annecy, Briançon, Moûtiers, Goncelin and Valence, and many other places. Traffic depends upon the return of the cattle from summer pastures and upon the date

¹ (Dijon), pop. (1851), 32,300; (1872), 42,600; (1891), 65,400; (1921), 79,000.

when the summer pastures become available. At Goncelin the fair is held eighteen times a year; sheep and cattle are exported to Lyons, Montelimar, and Geneva; pigs are imported from Orléans, Neves, Toulouse, and Barcelona. These fairs are a survival of pre-railway and presteamship days.

During the Middle Ages Commodity fairs were held at Lyons and other centres in the medieval passage-way between Marseilles and the Low Countries; these commodity fairs declined in France after the seventeenth century, but Lyons adopted a modern development of the commodity fair in the Sample fair which was first held in 1916 and is now held twice a year. North of the town, between the Parc de la Tête d'Or and the river, a permanent fair has been built, and merchants may visit the fair without any need to visit the city. Here are samples of the industries of south-east France, and business is done to a total of 750,000,000 france.

#### 26. The Western Seaboard-The Landes

As far north as the mouth of the Garonne the coast follows a perfectly straight and monotonous line, broken only by the deep inlet forming the so-called Basin of Arcachon. The lowland country, thoroughly well-watered by the streams which flow from the northern slopes of the Pyrenees, is mostly covered with superficial deposits of gravel, sand, and mud, with quagmires here and there of considerable extent. Between the Adour and the Gironde, from Bayonne to Bordeaux, the arid moors of the "Landes" extend along the ocean, whose shores are here skirted by elevated dunes.

These dunes stretch for nearly 70 miles along the coast, over a strip of country with a mean breadth of more than 4 miles. They vary in height from 100 to

160 feet, and slope seawards at an angle of 25°, and landwards at one of 50°. Being composed of loose sand, their outlines are continually shifting, according to the play of the winds. On the whole, they have a tendency to encroach farther and farther on the interior. This encroachment appears to have begun within historical times. Montaigne, in the sixteenth century, notices it as a phenomenon of comparatively recent occurrence. It is, in fact, largely due to the ignorance and recklessness of the inhabitants, who did not discern the nature of the protection afforded by the forests which formerly existed on these coasts, but which they felled for the sake of the immediate profit. Within the present century, however, great improvement has been effected by reversing the process that led to the encroachment of sand. A forest of seapine, 7 miles in breadth, has been planted along a strip stretching from the Adour to the Gironde, and this forest serves as a barrier to protect the region within. This inner region constitutes the Landes proper, a district which can scarcely be described as exhibitanting. The wearied eye will often seek in vain for a restingplace, and discovers nothing but interminable plains, on which a few years ago there were scarcely any signs of human life, except where the weird figures of shepherds were to be seen flitting about perched on high stilts. Almost the whole region was a desert infected with malaria. But here also great improvements have been effected of late years. An engineer named Chambrelent, having carefully surveyed the district, found that it had on an average a fall of 1 in 1000 to the sea, and then drew up a scheme for draining and fertilising it. In 1857 a law was passed by the French legislature, obliging the communes interested to carry this scheme

into effect, and this has now been done over a large area with the most beneficial results. The country has been intersected by canals running in every direction; millions on millions of trees have been planted; the desert has disappeared; the quagmires have been reduced in number and extent; the Landescots, as the people are called, have less need to resort to the aid of stilts; and the malaria has been banished. Villages have arisen in hundreds, and the communes have enriched themselves to such a degree that they have been enabled to construct excellent roads, build numerous schools, erect fountains, and provide everything that could conduce to the improvement of the people. The entire plain of the Landes has an extent of something like 5400 square miles. Between the dunes and the Landes stretches a chain of shallow lakes which have been cut off from the sea by the formation of the dunes, and which are known to the French as étangs. The largest of these in this district is the Étang de Cazau, which occupies an area of about 15,000 acres.

North of the Gironde the French coast loses its monotonous outline, but it still remains low and bordered by dunes as far as the department of Finistère in the west of Brittany. The dunes, however, are low, and serve only to cut off from the sea a fringe of saline marshes which were formerly a means of support for the inhabitants of those regions, but in consequence of the cheapening of salt in modern times have become comparatively useless. In the west of Brittany the coast becomes rugged and dangerous, and something of the same character is continued along the north coast of Brittany and the Atlantic coast of Normandy (dep. Manche). The islands that skirt the coast between the Gironde and Normandy—Oléron, Rhé, Yeu, and Noir-

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moutier, Belle Isle, Groix, Ouessant or Ushant, off Brittany, and the Channel Islands, off Normandy—all have the same geological formation as the neighbouring parts of the mainland, from which they have beyond doubt been separated. Along the whole of the west coast, indeed, there is abundant proof that the land has suffered loss partly by subsidence and partly by marine erosion. Yet there has been in some places a compensatory gain in land wrested from the sea. The ancient Gulf of Poitou, for example, is now converted into arable and pasture land.

#### 27. The Coast and Uplands of Brittany

The isolated highlands of Brittany, the ancient Armorica, consist mainly of Silurian rocks and of granite and gueiss, attaining their greatest elevation in the west, where two parallel ranges, with a general west-south-west trend, run out to the two promontories respectively, north and south of the Bay of Douarnenez. The northern range is that of the Monts d'Arrée, the highest summit of which, the St. Michel (1285 feet), is the culminating point of Brittany. The southern range is that of the Montagne Noire, which owes its name to the sombre forests that once covered it, but of which only scanty relics survive. This range attains in the Menez-Hom the height of 1070 feet.

The main ridge of the Monts d'Arrée continues to skirt the north coast at a mean distance of 12 or 13 miles, its northern slopes being steep and abrupt, while the southern spurs merge in an undulating hilly region, the most noticeable feature of which is the Lande de Lanvaux, a plateau under 650 feet in height, parallel to

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the coast in the south-east of Brittany between the Blavet and the Vilaine.

In the angle between Normandy and Brittany is the Bay of Mont St. Michel, the greater part of which is occupied by a mud flat of about 100 square miles in extent, traversed by the lower courses of the See, Sélune, and Cuesnon, and entirely covered at high water, with the exception of the two rocky eminences of Mont St.



MONT ST. MICHEL.

Michel (400 feet) and Tombelaine (460 feet), and the embankment, which, since 1880, has connected the former with the mainland. The famous Mont St. Michel, crowned by an irregular town with an abbey and a church dating from the eleventh century, and an ancient castle, parts of whose ramparts are as old as the thirteenth century, has its counterpart and namesake in Mounts Bay on the Cornish coast. The resemblances between Brittany and Cornwall are indeed singularly close, extending to the geological structure, the mineral wealth,

the megalithic monuments, and the ethnological characters of the inhabitants. Finistère is the "Land's End," and near Quimper there is a French "Cornwall" or Cornouaille, the Cornu or "horn" of the Welsh.

The high tides on the south side of the English Channel (see above, p. 15) must obviously greatly hasten the work of destruction wrought on the coasts by the ocean, and must have contributed not a little to the separation of the Channel Islands from the adjacent mainland. This separation is very recent. In the time of Julius Cæsar the island of Jersey is said to have been divided from the coast of Gaul by only a narrow strip of water, which could be crossed on a plank; and even at the present day a rise of about 10 fathoms (in some places only 5 fathoms) would bring the whole area between Cape La Hague and Tréguier, on the north coast of Brittany, above the surface of the water, reuniting the Channel Islands to France.

# 28. West France

West France is bounded by the Paris basin and the sea; it forms a geographical unit in consequence of the unity of its terrain and the physiographic development of its surface. It is not a geological unit, since it stretches beyond the Armorican block mountains and the depression of *Perche* to the hills north of the Loire; it is not a political or administrative unit, for it includes Brittany, part of Normandy and Vendée. It is the country of bocaye, land parcelled out between continuous spinneys and shrubbery. Each small field is isolated by the thicket of spinney growth with impenetrable undergrowth, which forms a continuous perfect hedge. The roads lie deep below the land level and, in a land

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of impermeable soil and rock played over by the rainbearing winds from the Atlantic, are frequently impassable. Isolation on tiny farms, in small villages, coupled with a primitive self-sufficiency, has made the West the most conservative district in France.

Physically three Armorican blocks rising in West Brittany to 1280 feet, in West Normandy to 1355 feet, and in Vendée to 950 feet, form three watersheds. The present surface is a peneplain, the result of an interior uplift, although the rias of West Brittany and the submerged valleys off the mouths of the rivers are evidence of coastal depression. But the existing surface bears traces of two former cycles of erosion, since there are signs of two older peneplain surfaces. Also, between St. Malo and St. Nazaire, and up the Loire valley to Blois, is evidence of a great intrusion of the sea, which explains the outflow of the Loire from the Paris Basin between Vendée and Perche. Erosion of the latest peneplain surface is a comparatively recent phenomenon, for the streams have yet much work to perform before they approach base level, and the narrow gorges and steep sides of the lower streams are in contrast with the open valleys barely incised in the plateau of the upper portions of the same rivers.

Recently progress and change have reached the West. Fertilisers have been introduced on the farms and wheat has displaced rye; the railways have thrown the people back to their most suitable occupation—cattle-rearing. Dairy products find a ready market, and live cattle are bred in large numbers to be fattened on the valley pastures of the West or the Paris Basin, or even so far east as Belgium.

# 29. Towns of the West

In Brittany Rennes, standing where the valley of



HÔTEL DE VILLE AND OLD LIGHTHOUSE, CALAIS.

the Vilaine, changing its direction, marks out the natural direction of the roads eastwards towards Paris and

<sup>&</sup>lt;sup>1</sup> (Rennes), pop. (1921), 77,000.

Orléans, and southwards to the mouths of the Vilaine and the Loire, has been the chief town in the interior of Brittany since Roman times, and retains in a corrupted form the name of the tribe of the Redones, whose capital it was. Though first known to the Romans as Condate, it appears in the Notitia as Civitas Redonum. port of St. Malo, so celebrated among French towns in every branch of maritime enterprise, the birthplace of Jacques Cartier, the Canadian explorer, and of the mariner, Duguay Trouin, is a town of comparatively late date, though in Roman times it seems to have had a predecessor in Alethum, on the opposite promontory in the estuary of the Rance, on which St. Servan now stands. The inhabitants of Alethum appear to have gradually migrated between the ninth and thirteenth centuries to the island now connected with the mainland by a causeway, which forms the site of the modern seaport. It is in the ninth century also that the first mention of Brest 1 occurs, though there appears to be no doubt that its fine harbour was the terminus of a Roman road, and the remains of an old Roman fort on the site of the castle or citadel of Brest, which dates from the thirteenth century, probably justify the identification of this place with the Gesocribate of the Itinerary. It is chiefly important as a naval station, though it also has a certain amount of commerce and industry. In southern Brittany, the chief city of the ancient Veneti survives as Vannes. Lorient, on the other hand, is quite a modern town. It owes its origin as well as its name to the French East India Company (Compagnie de l'Orient), by which it was founded in 1670. Just one hundred years later, on the dissolution of the company, it was made a naval station and arsenal, which it still remains. It also possesses a national dockyard.

<sup>&</sup>lt;sup>1</sup> (Brest), pop. (1872), 66,300; (1921), 74,000.

The seaport of Nantes, the Condovienum or Condovincum of the ancients, still reminds one by its modern name that it was at one time the capital of the Namneti. This famous old seaport stands at the confluence of the Loire and the Erdre, the old town in the angle between the two, and accordingly on the left bank of the latter. Among relics of the past it possesses a cathedral begun by John V. in 1434, and a ducal castle rebuilt by Francis II. and his daughter, Anne of Brittany.

Going southwards from Tours, and immediately after leaving the city, one crosses the Cher, and then also the Indre, Creuse, and Vienne, before reaching Poitiers, anciently the civitas Pictavorum, standing on a rock in an exceedingly picturesque portion of the valley of the Clain. Insignificant as this river is, its valley is geographically of great importance—few more important in France. From about the confluence of the Claise. more than 30 miles below Poitiers, the valley of the Vienne strictly defines as far as the confluence of the Clain, the course of the great southern road and railway, which then adhere with equal strictness to the narrow valley of this latter river for more than 20 miles above Poitiers,—to within a short distance of that portion of the valley of the Charente, where also the ground has a meridional slope. This circumstance gives to Poitiers a great strategic importance, and has made its neighbourhood the scene of more than one historic battle. It must have been by this route that the Saracens were advancing northwards, when they were stopt and finally defeated by Charles Martel in a seven days' battle, fought somewhere to the north of Poitiers (732). A little to the east is the scene of the victory of Edward the Black Prince in 1356.

<sup>&</sup>lt;sup>1</sup> (Nantes), pop. (1513), 40,000; (1789), 90,000; (1896), 124,000; (1921), 184,000.

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### 30. The Central Massif

The Cevennes form the south-eastern boundary of the central highlands of France. In the more comprehensive sense of the term they include several mountain ranges and groups, in two great sections, a southern and a northern. The former begins in the south-west with the Montagne Noire on the borders of the departments of Tarn and Aude, rises to nearly 4000 feet in height, and comprises in its general north-easterly course the Monts de l'Espinousse, Monts Garrigues, and the range to which the name of the Cevennes is applied in the narrowest sense—the range terminating on the north with the Montagne de Lozère (5580 feet) at the gorge of the Chassezac, a right bank tributary of the Lozère, its most southerly heights being those round the massive of Aigoual (5140) at the head of the valley of the Gard. The northern section of the Cevennes (in the wider sense) comprises the Monts du Vivarais, with the volcanic district of Mont Mézenc (5755 feet), the Monts du Lyonnais, the Monts du Beaujolais (3320 feet), and the Monts du Charolais (2540 feet), which descend to the depression occupied by the Canal du Centre.

On the east these mountains sink abruptly down to the Rhone valley, and on the south-west the Central Massif descends with equal abruptness to the basin of the Gironde, but on the north it merges more gradually with the plains.

# 31. The Old Volcanoes of Central France

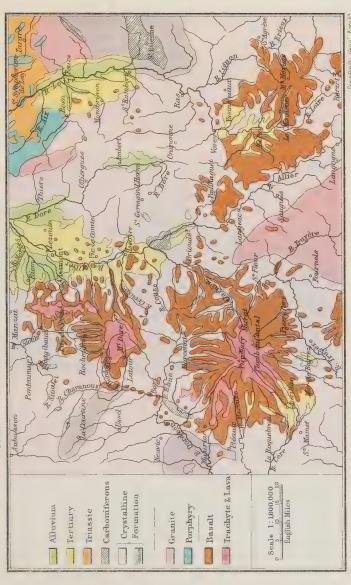
During the Miocene age central France was the scene of volcanic activity on a gigantic scale; and this activity probably continued with more or less intermission down to a comparatively recent date. Relics of

these old volcanoes may still be seen, not only in thick beds of ejected matter and widespread sheets of basaltic lava, but in the volcanic cones themselves, which, notwithstanding the wear to which they have been incessantly exposed since their formation, still retain to a great extent their original shape and characteristic structure.

The best known and perhaps the most interesting of these volcanic centres is that of Auvergne, where, in the neighbourhood of Clermont, a chain of about seventy conical hills, known locally as puys, stretches in a north and south direction for a distance of about 20 miles. These hills rise from the great central platform of granitic and gneissose rocks, which is in places covered with freshwater strata of considerable thickness representing the sediments of ancient lakes, associated with volcanic matter locally interstratified. The chain of puys runs between the valley of the Sioule on the west, and that of the Allier on the east; the latter spreading out as a wide and fertile plain known as the Limagne. Built up mainly of scoriæ and ashes, with blocks of lava, they present in many cases well-preserved craters, while in others the brim of the crater has been broken down on one side, in consequence of the weight of the extruded lava having burst through its lip. From these breaches in the craters streams of lava may still be traced. These fields of lava, either bare or but partly clothed with brushwood, are known to the Auvergnats as cheires. At Volvic the old lava is largely quarried as a building stone.

By far the largest of these volcanic hills is the famous  $Puy\ de\ D\hat{o}me$  in the centre of the chain. Formed of a peculiar trachytic rock known from this locality as domite, it rises as a rounded mass having a height of

# THE VOLCANIC REGION OF CENTRAL FRANCE



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4805 feet above sea-level, and an elevation above its base of 1600 feet.

Sheets of basalt, representing old currents of lava, are widely spread over the Limagne, and have been worn through in places so as to leave isolated hills with characteristic flat tops. Such, for example, is the broad plateau of Gergovia, 2440 feet high, to the south-east of Clermont—famous as the site of the old capital of the



THE PUY DE DÔME.

Averni, where Vercingetorix so long withstood the legions of Julius Cæsar. The greater part of the plain of the Limagne, however, is composed of Tertiary lacustrine deposits continually overspread with volcanic dust, which in this valley almost always fills the air with a light mist, and on falling enriches the soil with phosphoric acid, potash, lime, and other fertilising ingredients.

To the south of the chain of the Puy de Dôme is the noble volcanic mass of *Mont Dore*—the old Mons Durianus—which derives its name from a local stream called

Le Dore. Its form is that of an irregular depressed cone, with seven or eight rocky peaks, but with no regular crater. The highest point is the Pic de Sancy, a pyramidal mass of trachyte rearing its summit to an altitude of 6185 feet. This height is, however, nearly equalled by some of the neighbouring peaks, such as that of Puy Ferrand. Sulphur and alum are worked in the volcanic rocks of Mont Dore, and the neighbourhood abounds in thermal and mineral springs.

The greater portion of the department of the Cantal is formed of a volcanic mass, resembling in many respects that of Mont Dore, and presenting the form of a flat cone with gently sloping sides, furrowed by numerous radiating valleys. This gigantic cone, with a circumference of about 95 miles, had probably but one principal crater. The highest point is the Plomb du Cantal, 6095 feet high, whence flowed enormous currents of basaltic lava. It is believed that the volcanoes of Mont Dore and of Cantal may have been in eruption at the same period. The thermal waters of Chaudes-Aigues flow to the south of the Cantal, from which they are separated by the valley of the Truyère; while still farther south, in the department of Aveyron, is the small volcanic district of Aubrae.

The granitic range of the Montagnes de la Margeride—an offshoot of the Cevennes—divides the Cantal from the volcanic region of the Haute Loire and Ardèche. Here the culminating point is on Mont Mézenc, at an altitude of 5755 feet. This mountain is a mass of phonolite, or clinkstone, rising from a platform of granitic and Jurassic rocks between the Loire and the Rhone. Currents of basaltic and phonolitic lavas have spread over a wide area in the old provinces of the Velay and Vivarais. The sources of the Loire gush forth from the

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foot of a volcanic hill in the Hant Vivarais known as Le Gerbier des Jones. Relics of the old igneous action are found as far south as Jaujae, a volcanic hill with chestnut-covered slopes; while the Hills of Coiron, trending onwards to the Rhone valley, consist of granite capped by a sheet of basalt.

Between the Loire on the east and the Allier on the west the volcanic rocks form a series of heights stretch-



LE PUY.

ing from Pradelles to the neighbourhood of Le Puy, the capital of Haute Loire.

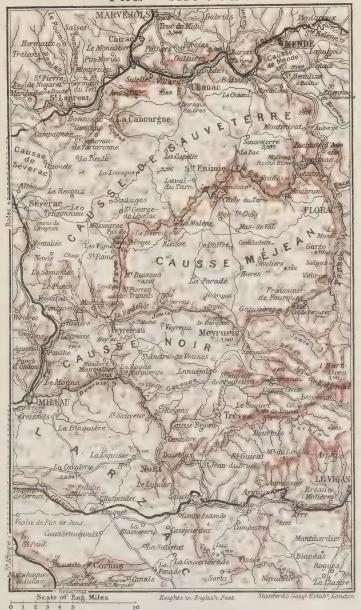
Around Le Puy, especially at La Denise, are some interesting brecciated deposits consisting of volcanic matter in intimate association with the remains of the hyæna, rhinoceros, elephant, and other mammalia of Pleistocene or perhaps Pliocene age. With these were found, according to Mr. Aymard, two human skeletons, the authenticity of which has, however, been the subject of considerable debate. It has been supposed that "the

fossil man of Denise" must have witnessed the latest eruptions of the French volcanoes, and have fallen a victim to their activity.

# 32. The Causses and the Ségalas

South of the volcanic region of central France the characteristic surfaces are isolated plateaux of different character. The prevailing form in the east is that of the Causses, a name that indicates their origin and explains their character. It is derived from the Latin calx, meaning "lime," and is applied to nearly level limestone plateaux separated from one another by narrow and profound gorges. The four principal Causses are the Causse de Sauveterre, the Causse Méjean, the Causse Noir, and the Causse de Larzac. Their characteristics are those of limestone plateaux generally, such, for example, as are indicated on a small scale by the mountain limestone of the Pennine Range of England. The surface, though level as a whole, is seamed with innumerable cracks and fissures in which the rain disappears as rapidly as it falls, and the edges get rounded and the fissures widened by the solvent action of the carbonic acid in rain-water. Surface streams are few, but underground streams numerous, and forming in places an intricate network, flowing from one stalactite cavern to another, and plunging from one natural tunnel to another at a lower level, sometimes suddenly reappearing on the side or at the base of a cliff as the Aire does at Malham Cove. During a course of 31 miles between the Causse de Sauveterre and the Causse Méjean, the Tarn receives thirty underground streams but not one surface one. Surface pits, 100 to 600 or 700 feet in depth, locally called avens, answering to the dolinas of the Karst, abound. For the most part the Causses are absolutely

# THE CAUSSES



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sterile through the absence of soil, and even where a little soil collects in shallow pans through the favour of a bed of clay, it is far from fertile, owing to the character of the climate in such a high and exposed situation, where eight months of rigorous winter are followed by a short summer of intense heat.

West of the Causses the prevailing form of plateau is that of the *Ségalas*—that is, the *seigle* (rye) lands, which have a more varied undulating surface. They occur chiefly between the middle Aveyron and middle Tarn, west of the Causse de Larzac.

### 33. Towns in the Central Provinces

Proceeding south by east from Paris towards the heart of the Central Plateau, one crosses no important stream till the Loire is reached at Nevers, 130 miles in a direct line, 158 miles by rail from the city. That town represents the town of the Ædui which the Romans at first called Noviodunum, but which, before the close of the Roman domination, was known as Nibernus and was the see of a bishop. Crossing the Loire there one proceeds southwards into the Limagne, where even in Roman times Gergovia, the capital of Vercingetorix, the city to which Julius Cæsar laid unsuccessful siege, had been succeeded by another town occupying the site of the present Clermont, on a low hill 150 feet in height, at the head of a semicircular valley forming a western bay of the Limagne. In ancient times this town bore the name of Augustonemetum, but that name seems to have been wiped out with the town itself by the Normans, and the new town which arose on its site is already met under the name of Clarus Mons in a document of the year 848. (See above, p. 346.)

Ascending the valley of the Loire from Nevers, the only important town one comes to is the manufacturing town of St. Etienne, on the Furens, a place which grew up in modern times round the Cisterican abbey of Valbénorte. Its first industry, sword-making, was introduced only in 1535, and was due to the perception of the excellence of the water of the Furens for the tempering of steel. The ribbon manufacture followed soon after.



CLERMONT FERRAND.

Continuing southwards one reaches Angoulème, the ancient Iculisma, afterwards Engolisma, at the angle where the Charente changes its course from south to west. Following the Charente downwards, after passing Cognac and Scintes (the ancient capital of the Santones), one reaches Rochefort (-sur-Mer), an arsenal and naval station, a few miles above the Bay of Aix, at the north end of which is another arsenal and naval station, that

<sup>&</sup>lt;sup>1</sup> (St. Etienne), pop. (1800), 17,000; (1850), 50,000; (1872), 86,000; (1921), 168,000.

of La Rochelle, which is connected with Poitiers by the line running north-east through Niort.

At Angoulême the southern road and railway begin to run south-westwards towards Eordeaux, the ancient Burdigala, the great seaport on the left bank of the Garonne, the next in importance after Havre on the western seaboard of France, still renowned for its wine, insignis Baccho, as it was when Ausonius, a native of the city, sounded its praises in the fourth century, and still boasting, as he did, not only of its mild air and fruitful soil, but also of the manners and bodily and mental gifts of its inhabitants, boasts not altogether disclaimed by the rest of France, at least as regards the beauty of its women. As a seaport, in spite of improvements in the river, it is not accessible to modern vessels of the largest type, but for these it has an outport in Pauillac.

Proceeding south-eastwards from Bordeaux, one reaches Toulouse,<sup>2</sup> the ancient Tolosa, at the turning-point of the Garonne, just below the confluence of the Ariège and opposite the passage of Naurouse, through which one enters Provence. North-east of Toulouse, in a valley of the Central Plateau, the town of Rodez, locally pronounced Roudez, still preserves the name of the ancient Rutheni, the inhabitants of Rouergue. It stands on a broad hill washed on three sides by the Aveyron, amidst fine meadows in one of the most beautiful parts of the valley of that river. In Roman times, judging from the remains of its amphitheatre, it seems to have had from 10,000-15,000 inhabitants, and it was made the seat of a bishop at the end of the fourth century.

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 $<sup>^1</sup>$  (Bordeaux), pop. (1851), 130,900 ; (1872), 194,100 ; (1891), 252,400 ; (1921), 267,000.

<sup>&</sup>lt;sup>2</sup> (Toulouse), pop. (1851), 93,400; (1872), 124,900; (1891), 149,800; (1921), 175,000.

### 34. Corsica

Physically Corsica, which was taken in 1768 by the French from the Genoese, who had held it under their suzerainty since 1347, belongs rather to Italy than France. The two islands were at one time connected by an isthmus across what is now the Strait of Bonifacio. A submarine plateau of no great depth joins Corsica with the Tuscan coast, while water of considerable depth separates it from France.

The island is characterised by fine forests and splendid mountain scenery; its highest summits, Monte Cinto (8890 feet) and Monte Rotondo (8610 feet), exceeding by considerably more than 2000 feet the loftiest of those of central France. The verdant hills near the coast are clad with the characteristic fruit-trees of the Mediterranean, including the orange. Minerals (copper, silver, lead, antimony, iron, besides granite, porphyry, serpentine. and white marble) abound but are little worked. beautiful rock called Napoleonite or Orbicular diorite. occasionally polished as an ornamental stone, is limited to Corsica. The vegetable productions of Corsica and Sardinia present a mixture of European and North African types. The finest European conifer (Pinus altissima), which sometimes reaches a height of 160 feet, is indigenous to Corsica. Among the animals the most interesting is the Moufton (Ovis musimon), which is still found both in Corsica and in Sardinia 2

Ajaccio, the birthplace of Napoleon, is the capital.

<sup>&</sup>lt;sup>1</sup> Area, 3368 square miles; pop. (1896), 290,000.

<sup>&</sup>lt;sup>2</sup> See a monograph by Ralph Richardson, in the Scot. Geog. Mag. 1894, p. 505.

# CHAPTER VII

### SWITZERLAND

### 1. Relief of the Land

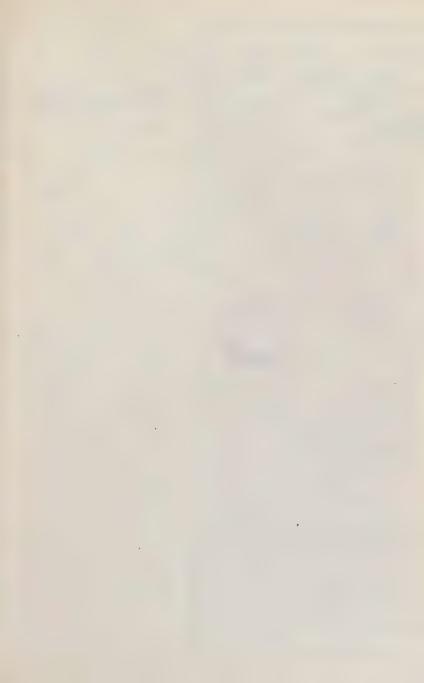
SWITZERLAND may be described in few words as the land of the central Alps and the Jura. In neither case do the culminating points of these mountains belong to Switzerland. Both the highest peak of the Alps and the highest summits of the Jura are now included within the political boundaries of France. Yet Switzerland contains the highest ranges of the Alps and the greater portion of the chain of the Jura, while the intervening plain makes up the rest of her territory.

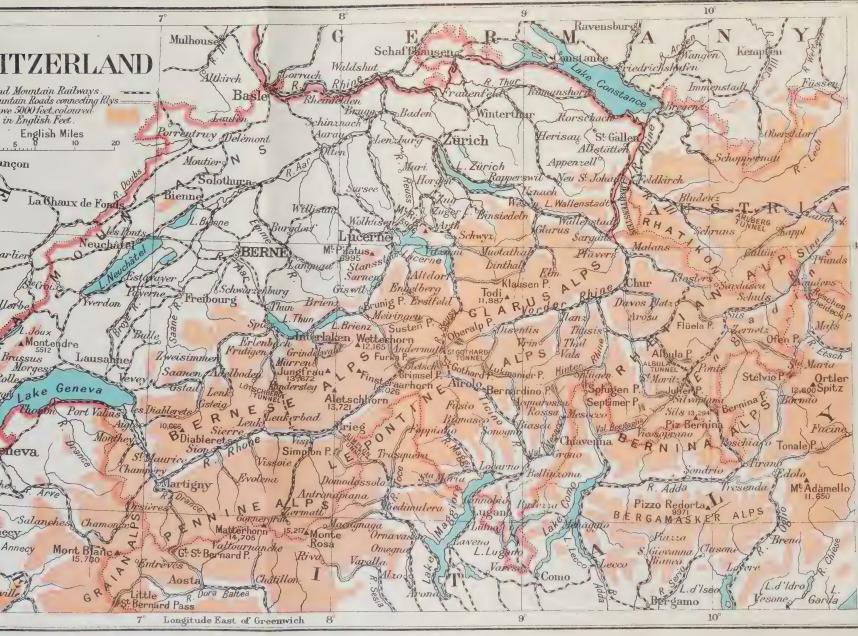
At Bern, standing on the edge of the elevated platform that overhangs the Aar and commands the Swiss plain, one looks southwards over a rich valley gradually retreating to the recesses of the mountains, whose snowy peaks form a long and continuous but jagged line in the background, while westwards and northwards the eye ranges over a wide plain gradually sinking northwards, and bounded on the north-west by the straight and uniform escarpment that limits the Jura on the side of Switzerland. Standing on the summit of the Rigi, on the Lake of Lucerne, near the northern limit of the mountain region, one looks eastwards and southwards

over a troubled sea of snow-fields and glaciers, bare rocky scars and crags, and mountain forests and pastures, with lakes lying at the foot. In the south-east the mountains rise not from low valleys but from plateaux. The general level of the lowest parts of the Grisons, or Graubünden, is at least 3200 feet, and the canton includes tracts at a much higher elevation. The valley in which lies the now celebrated health-resort of Davos-Platz is upwards of 5000 feet above sea-level, and the valley of the Engadine, watered by the Inn, in the extreme south-east, has an elevation of 4900 to 5900 feet in its upper part, above Zernetz, and of 4900 to 3300 feet in its lower part, which is more sloping.

# 2. The Ranges, Valleys, and Glaciers of the Alps

A special advantage in the configuration of the Alps is presented by the number and size of the valleys. The longest and most important of these depressions follow the same direction as the main ranges. Such longitudinal valleys are formed by the upper course of the Rhone and of the Rhine in Switzerland, besides those of the Inn and Salza, Enns and Mur, Drave and Save, farther east. The upper Rhone flows along the bottom of the valley bounded north and south by the principal chains of the Alps, the Bernese Alps in the north, and the Pennine and Lepontine ranges in the south. To the northern range belong the Wetterhorn and Wellhorn, the Schreckhorn and Finsteraarhorn, the Eiger, Mönch, and Jungfrau, all of them rising to upwards of 13,000 feet in height, while the Finsteraarhorn exceeds 14,000 feet; and to the Pennine Alps, the western of the two southern ranges mentioned, belong the peaks of Monte Rosa, Mont Cervin, or the Matterhorn, and (beyond the frontiers of Switzer-





land, as already stated) Mont Blanc, all approaching or exceeding 15,000 feet. Monte Rosa, on the frontiers of Italy and Switzerland, attains a height of 15,217 feet, and Mont Blanc rises to 15,781 feet. Naturally shorter



THE MATTERHORN.

and more abrupt, because lying athwart the main line of the ranges, are the transverse valleys, which are distinguished by a regular succession of narrow gorges and level mountain glades. The largest intersecting valleys are formed by the Reuss in Switzerland, the Etsch (Adige) in the Tirol, the Rhine between Coire (Chur) and Lake Constance, and the Rhone between Martigny and the Lake of Geneva.

Although in comparison with the loftiest ranges of other continents the Alps, which are, apart from the Caucasus, the highest elevations in Europe, assume a secondary position, Bonstetten was still justified in asserting that "all the grandeur conceived by the imagination must seem tame in contrast with the Alps." As we approach them from the north side we first meet with their forerunners, the Voralpen, or Fore-Alps, as they are called by the Germans, from 4000 to 5000 feet high. Seen from a little distance they look like the outer ramparts, the regularly constructed exterior walls of the lofty stronghold of Europe, above which the rocky and snowy crests of the central mass glittering from afar often rise to a still greater height, thus resembling the pinnacles of the inner lines of the fortifications. These summits do not appear as isolated cones, but, springing in bold outline from the highest portion of the ridge, assume at one time the appearance of jagged crests, peaks, horns, or teeth, whence the various terms piz, grat, first, dent, aiguille, applied to them; at others resemble the rounded form of a tower, or else, as in Mont Blanc the highest of all, they assume the shape of a dome. Extensive snowfields and masses of ice are embedded between their frowning walls. As the outflow of these eternal ice and snow fields of the upper regions, the glaciers, like lava streams, slide down in solid masses of snow and ice far below the snow-line, some continuing their course for from 20 to 30 miles, forcing their way through the deep channels of the enormous ravines by which the mountainsides are furrowed. One, the lower Grindelwald glacier, descended at the time of the last maximum extent of the Swiss glaciers (1855) to within 3200 feet of the sealevel. As to the former extent of some of these Alpine glaciers during the Ice Age, as indicated by their morainic remains and deposits of *roches moutonnées*, see the Introduction, p. 27, and also under Italy, pp. 58, 59.

The arcuate direction from S.W. to N.E. of the Jura, the limestone initial waves of the Alpine storm, the complementary valley or trough, the Middle Alps, the Rhone-Rhine longitudinal valley and the southern overthrust folded heights, are due to the direction of pressure from the south-east against the old blocks of the pre-Alpine mountains. Hence the culmination of ridge and river valley at the St. Gothard knot.

# 3. Alpine Passes-Highways and Railways

On the configuration of the valley systems depend the Alpine passes, several of which have been almost wholly due to the labour of man. Some of them effect a communication between valleys confined to the north or Swiss side of the Alps, and of these the most celebrated are the Grimsel and Furka passes at the head of the Rhone valley, connecting it respectively with the Hasli-thal, or upper part of the Bernese Oberland, and the Urseren-thal, or head of the valley of the Reuss, and the Gemmi Pass, a triumph of engineering skill, forming the only lateral communication between the Bernese Oberland and the Rhone valley. Others serve as the means of communication between Switzerland and Italy, and of these the most important are that of the Great St. Bernard in the Pennine Chain, that of the Simplon in the Lepontine Alps, that of St. Gothard at the head of the valleys of Reuss and Ticino, and those of Bernardino, Spligen, Septimer, Bernina, and others leading from the Grisons southwards. In all, the Alps are crossed by

about forty commercial highways, the shortest being those leading from one transverse valley to another. Still more numerous are the natural passes unprovided with roadways.

Here may be quoted an instructive remark of Desor, explaining the connection between the conformation of the mountains and the distribution of the passes: "As the central mass or crystalline nucleus has been upheaved to a greater height than the surrounding sedimentary rocks, these latter, however changed or transformed, must still be different in their appearance from the crystalline rocks themselves. They are also generally at a lower elevation, and it seldom happens that they reach the altitude of the crystalline formations. These relations are of the greatest consequence for the orography of the Alps. As each central crystalline mass presents a long or ellipsoidal nucleus, and as the highest point is on the whole coincident with the middle of the central mass, it follows that the depressions in the Alpine Chain must correspond with the intervening spaces between the ellipsoidal or central masses. Here accordingly are found the accessible ridges and the principal Alpine passes of which any use has been made, except when the crystalline mass itself may by any chance happen to be intersected by cross valleys. Such, amongst others, are the Col di Tenda, the M. Cenis corresponding to the depression between the Cottian and Graian Alps, the Col du Bonhomme between Mont Blanc and the Western Alps, the Great St. Bernard, the Lukmanier, the Bernardin, the Spligen, the Bernina, to some extent the Stelvio, the Reschen - scheideck, and above all the Brenner Pass, which is the oldest Alpine highway. The passes of the eastern Alps all present wellnigh the same relations, those especially, such as the Rauris Pass, which lead over the Tauern range. Farther eastwards the chain sinks sufficiently to allow of its being crossed almost anywhere. In Switzerland there are scarcely more than two passes that do not follow the zones or depressions of the sedimentary rocks—the St. Gothard and the Simplon. But it must not be forgotten that the reason why the St. Gothard is used must be sought for in the side valleys of the Reuss and Ticino, which are near enough materially to shorten the journey over the moderately elevated crest of the St. Gothard. The Simplon Pass again crosses the crystalline mass of like name at its extremity, where it has become very narrow and considerably lower; thence it soon reaches the valley of the Diveria, and farther on the defile of the Val Formazza, which falls little short of being a perfect cross-valley."

Of the great pass-roads connecting Italy through Switzerland with southern Germany the most important in Roman times and throughout the Middle Ages was the Septimer Pass (7580 feet), connecting the head of the Val Bregaglia (in German Das Bergell) with the Rhine valley above Chur by way of the Oberhalbstein and the Albula. This has long lost its importance, and is not now crossed by a carriage-road, but it had a paved Roman road suitable for wheeled carriages, and as late as 1275 or thereabouts Chur or Coire, the Curia Rhætorum of the Romans, is spoken of by the bishop of that diocese as in pede montis Septimi, a clear indication of the dominant position belonging to that pass at that date. From the twelth century and perhaps earlier down to the fourteenth toll was levied on this road at Vicosoprano (that is, "chief town"), the capital of the Val Bregaglia.

Chiavenna, at the mouth of this valley a few miles north of Lake Como, owes its name, from the Latin *clavis*, to the fact of its being the key both to this pass and the Splügen (6945 feet), which is reached by a road leading directly northwards to the valley of the Hinter-Rhine. The ascent to the Sphigen is louger but necessarily more gentle than that to the Septimer, and this fact has caused the preference to be given to it for the carriage-road that now connects the Hinter-Rhine with Lake Como. In Roman times there were, indeed, roads both across it and the neighbouring pass to the west, the Bernardino (6765 feet), connecting the same valley on the north side with the Lago Maggiore by way of the Val Mesocco, but they were so narrow that it is doubtful if they were ever used by wheeled vehicles. After the union of these two roads on the north the single road then passed through the district of Schams to the east of the Via Mala. Till about 1470 not even a narrow sumpter path led through this gorge, and no carriage-road traversed this gorge till 1822, but after the opening of the sumpter path just referred to, the old imperial road over the Septimer began to be deserted.

The St. Gothard Pass (6946 feet), which was long so important on account of the directness of the communication it established between the middle of the plain of Lombardy and the northern part of the Swiss tableland, together with the valley of the middle Rhine, was not used in Roman times nor in the early Middle Ages. The character of the route was not favourable to traffic. At the head of the Ticino valley, which the route follows after ascending between the Lago Maggiore and the Lake of Lugano, there is an extremely difficult track exposed to avalanches. Beyond the pass there is the upland Urserenthal, whose connection in the Middle Ages was chiefly eastwards with the Vorder-Rhine by the Oberalp pass (6730 feet). Leading northwards from this valley there is first the gorge or cañon of the upper Reuss, which was

quite impassable till about the beginning of the thirteenth century. A route was then made for foot-passengers through it, and not till towards the end of that century was there a complete sumpter path by means of a gallery suspended in chains from opposite walls of the gorge. In 1278 goods were still sent from Lucerne round by



THE ST. GOTHARD RAILWAY AT WASEN.

the Septimer pass. It was only in 1707 that this gallery was superseded by the tunnel known as the Urner-loch. The St. Gothard carriage-road was constructed in the years 1822-30. But even then the difficulties of the direct route northwards were not fully overcome. The cliffs on the side of the Bay of Uri had still to be passed, and here the Axenstrasse was hewn out of the face of the rock and the road at last completed in 1866. Now this whole route has been to a large extent

superseded by a railway. In addition to the Axenstrasse there is now a tunnel through the Axenberg, and between the spring of 1872 and that of 1880 a railway tunnel nearly 10 miles in length was driven through the great mass of the St. Gothard at the joint expense of the German, Swiss, and Italian governments, and that of some of the Swiss cantons most interested. The tunnel starts at Göschenen in the valley of the Reuss on the north, and ends at Airolo in that of Tieino on the south, and reaches at its summit a level of 3786 feet above the sea. The approaches are made on both sides in numerous windings with several loop (spiral) tunnels through the mountains.

The Simplon pass (6600 feet), on the route following the west side of the Lago Maggiore and then ascending the valley of the Toce and the Val di Vedro to descend to Brieg on the Valais on the north, was also a paved Roman road, but it is very little mentioned in the Middle Ages, so that it is doubtful if it was continuously used. The first hospice at the pass (not far from the present one) is first mentioned in 1235. Afterwards the pass was regularly used by the Milanese in going to Vaud and even to France. Here between 1800 and 1806 Napoleon made the first good carriage-road across the Alps, and it is now proposed to pierce the Alps under this pass also with a railway tunnel. The plans are now finally agreed on. The length will be 121 miles, and the total estimated cost is three and a quarter millions sterling. The Simplon tunnel,  $12\frac{1}{4}$  miles long, is lower than the St. Gothard or Mt. Cenis tunnel; in connection with it the Lötschberg tunnel, 9 miles long, shortens the route between Lombardy and France.

The last important pass connecting Switzerland with Italy is that of the Great St. Bernard (8110 feet), starting

on the Swiss side at Martigny in the valley of the Drance and terminating at Aosta in that of the Dora Baltea. Here also there was a paved Roman road, of which portions are still in use, but it was never wide enough for carriages. The hospice is mentioned in documents as early as the tenth century. In modern times carriages sometimes cross it in summer, but there is no regular carriage-road.

Characteristic among Swiss railways are those not intended as means of communication in the ordinary sense, but laid up the sides of mountains whose summits are famous for their views. Two such railways lead to the summit of the Rigi, one from Vitznau on the Lake of Lucerne, constructed in 1869-73, the other from Art on Lake Zug, constructed in 1873-75. Another railway of the same kind was laid up Mount Pilatus from the head of the Alpnach arm of the Lake of Lucerne in 1886-88, and on this the extreme gradient is the steepest of all—nearly 1 in 2, as against 1 in 4 on the Vitznau, and 1 in 5 on the Art railway. Rock-and-pinion railways of this type have made accessible to non-climbing tourists many of the well-known peaks.

# 4. The Jura Mountains and the Swiss Plateau

The mountains in the north-west of Switzerland contrast with those in the east and south, not only in respect of their inferior height, but also in the regularity of their chains. The Jura mountains are composed of limestone strata thrown into a series of long folds, which still mark the mountains and valleys. The anticlines and synclines are coincident with the ridges and furrows which are the leading physical features of the region. The Jura arise in France, where their highest elevations (Cret de

la Neige, Dôle, Mont d'Or, etc., 5500-5660 feet) are to be found; in the south-west of Switzerland they possess several summits not much less in height, but gradually get lower, especially to the north of Solothurn, and finally sink to about 2000 feet above sea-level. The Swabian Alps and the Franconian Jura, in south-western Germany, may be regarded as a continuation of this range. slopes of the Jura are covered over vast areas with pineforests, which give them a very sombre appearance, and the high valleys that occupy their folds are often bleak and uninviting. Like other limestone mountains, they are in many places hollowed out into caves, and allow the drainage to escape into subterranean fissures, as in the Karst region on the Adriatic and the region of the Causses in Central France. The Perte du Rhône at Geneva, where the Rhone suddenly plunges into a deep limestone gorge, and disappears for 300 feet under the rock, is the best known example of this structure.

Limited southwards by the abrupt shores of Lake Geneva, the Swiss upland plateau stretches out in a north-easterly direction at a mean altitude of about 1400 feet between the Alps and the Jura, thus forming an extensive longitudinal valley, intersected by the widely-ramifying water system of the Aar, and reaching as far as Lake Constance and the Rhine.

# 5. Rivers and Lakes

Switzerland being the country in which the mountains of central Europe culminate is naturally a land belonging to many different river systems. Its rivers belong to the basins of the North Sea, the Black Sea, and the Mediterranean, and to this last-mentioned sea it sends streams on both sides of the Italian peninsula. It is the

land of origin of great rivers, not the land of their chief development. The Rhine and the Rhone both take their rise here, the one destined to flow into the North Sea, the other into the western bay of the Mediterranean. The Ticino carries its waters to the Po, and thereby to the eastern bay of the same sea; and the Inn, rising in the Engadine, ultimately joins the Danube, which bears its waters to the Black Sea. All the first three rivers rise in the same mountain mass, that of the St. Gothard, but the Rhine is formed by the union of three distinct headstreams, known in German as the Vorder-, Mittel-, and Hinter-Rhine. In general the Swiss rivers are too rapid to be of much service for navigation. The Rhone is said to be the most rapid of the larger rivers of the world. The Rhine is navigable for vessels of 150 tons at Coire in the Grisons, but the most important of the navigable rivers of Switzerland is the Aar, the tributary of the Rhine, which, after traversing the Lakes of Brienz and Thun, winds across the Swiss plateau to join the main river about midway between the Lake of Constance and Basel. The Aar is pushed across the plateau (cf. the Po) away from the Alps against the Jura by the weight and quantity of water and silt brought down from the Middle Alps. At its confluence with the Rhine it has the greater bulk of water.

The lakes of Switzerland, and the Alps in general, form a much more important hydrographical feature than the rivers. They are remarkable for their number, their size, their depth, and the beauty and grandeur of their scenery. Lake Geneva or Leman, the largest of all, has an area of about 220 square miles, or less than one-ninth of that of Lake Wener in Sweden. Both it and Lake Constance, or, in German, the Bodensee (208 square miles), belong partly to frontier countries, and Lake Neuchâtel, the

largest of the lakes belonging entirely to Switzerland, has an area of only 93 square miles (about three-fifths of that of Lough Neagh in Ireland). The depth of many of the lakes is in fact a more noteworthy feature. The greatest depth of the Lake of Geneva is 1015 feet (about midway between Lausanne and Evian), which makes its bottom not much more than 200 feet above sea-level,



THE LAKE OF GENEVA AND CASTLE OF CHILLON,

and the bottoms of the lakes on the southern side of the Alps are actually below the level of the sea.

The Swiss lakes afford excellent illustrations of the function of lakes as filters and regulators of rivers. They are nearly all fed by rapid mountain torrents, which enter their upper ends thickly charged with sediment. This sediment is deposited when the rivers enter the lakes, and when they leave the lakes at the lower end they issue as clear streams. The turbidness of the Rhone as it enters the Lake of Geneva, and the remarkable limpidity of its blue waters when it quits that lake, are equally well

known. As regulators of the rivers the Swiss lakes protect nearly all the lower valleys of Switzerland from disastrous floods. In time of flood the level of the lake gradually rises, and the fluctuations in volume of the lower course of the river are thus kept within moderate bounds. The Aar, however, even after leaving the Lake of Thun, is liable to have its volume greatly augmented at times in flowing over the Swiss plateau, which was in consequence formerly subject in certain parts to inundation; but this evil has been remedied by the construction of a canal diverting the Aar into the Lake of Bienne, or Biel, and thus enabling that lake to serve as the regulator of the lower course of the river.

The Swiss lakes likewise illustrate in a peculiarly striking manner the destiny of lakes to contract their limits and to become gradually obliterated. There is evidence to show that nearly all of them are now much smaller than they were formerly. The surface of the Lake of Geneva is estimated by J. Favre to have been nearly 250 feet higher than at present, and at that time the upper end of the lake would be at Martigny, where the Rhone suddenly turns to the north-west. According to Rütimeyer the Lake of Constance once reached to Bendern in Lichtenstein; that of Brienz to Meiringen; the Bay of Uri, the upper arm of the Lake of Lucerne (the Vierwaldstädtersee, or Lake of the Four Forest Cantons, as it is called by the Swiss), to Erstfeld; the Lake of Wallenstadt half-way to Sargans. Similar estimates are made for the Italian Alpine lakes, and in some cases the upper ends of these lakes are known to have been considerably higher even in Roman times, as is shown by the fact that Port Valais, the ancient Portus Vallesiæ, now lies 1, mile above the head of the Lake of Geneva.

¹ Credner, Die Deltas, pp. 73, 74; Gotha, 1878. (See above, p. 162.)
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The reduction in size that has since taken place is due partly to the lowering of the level of the outlet through the eroding action of the rivers draining them, but simultaneously with that the process already referred to, the deposition of alluvial matter at their upper ends, has led thus to the formation of deltas which are constantly increasing in extent. Through the operation of such causes several Alpine lakes have been entirely converted into dry land within historical times. The verdant valley of Urseren, which opens on the right from the Pass of St. Gothard as one ascends from the south, is an example of an Alpine lake that has undergone this fate.

Some of the Swiss lakes are remarkable for the differences of level sometimes observed in different parts of them, in consequence of differences in atmospheric pressure. Such variations on the Lake of Geneva are known to the French as seiches, while on the Lake of Constance they are known to the Germans by the name of Russen.

# 6. Geology and Minerals

The geological structure of Switzerland is extremely complicated. It will perhaps be most easily understood by regarding the plateau, stretching from south-west to north-east between the Lakes of Geneva and Constance, as an area of Tertiary (chiefly Miocene) deposits separating two mountainous areas composed mainly of rocks of more ancient date. The mountains on the west, the Jura, give their name to the rocks of which they are composed, and which are here extensively developed. The eastern limit of these Jurassic strata is indicated approximately by the western shores of the Lakes of Neuchâtel and Bienne, and by the lower course of the Aar. The mountains east of the plateau are mainly

formed of gneiss and mica-schist, with patches of granite here and there, but in many places, and especially in the south-east (the Grisons), various slates are also largely developed. But between this crystalline and metamorphic core and the Tertiaries of the plateau, there are various sedimentary rocks which have shared in the upheaval that gave rise to the Alps. The lowest of these are Triassic rocks in the Grisons north of the Vorder-Rhine and in the canton of Glarus, and these are followed by Jurassic formations which stretch in a continuous belt from Lake Wallenstadt to the bend of the Rhone above the Lake of Geneva. Reappearing farther west, there can be no doubt that these strata dip under the Tertiaries of the plateau to unite on the other side with the Jurassic rocks of the mountains of Jura. The same rocks, Triassic and Jurassic, are also found on the east of the slates of the Grisons among the Albula Mountains and in the Engadine. Cretaceous rocks succeed the western belt of Jurassic deposits, and these again are followed by lower and upper Tertiaries, the former, as late as the Miocene, having been upheaved, as we have already seen, to great elevations (see Introduction, p. 10).

A similar series of Secondary and Tertiary strata succeeds the central gneissic core also on the south side of the main chains of the Alps—in Italy and in Austria; and as both on the north and south the rocks of which these strata are composed are mainly limestones, the name of "Limestone Alps" is frequently given, especially in Germany, to these outer portions of the range. Formations of a different lithological structure are, however, also pretty extensively developed both in Switzerland and other parts of the domain of the Alps. In Switzerland, for example, there are two characteristic

non-calcareous formations that deserve to be particularly mentioned. One of these is called *flysch*, which consists mostly of a group of dark-coloured slates, marls, and sandstones, overlying the Eocene, remarkably poor in animal remains, but rich in relics of a fucoid vegetation. The other is the *molasse*, a term sometimes applied to the Miocene and Oligocene deposits of Switzerland generally, but in a more special sense restricted to a soft, green sandstone occupying an extensive area in the northern regions of the Alps. The *nagelflue* is a conglomerate belonging to the molasse group, and reaching a thickness of 2000 feet on the Rigi.

But the most remarkable feature in the geological structure of Switzerland, and of the Alps generally, is one that cannot be shown on a map merely indicating the superficial outcrop of the strata. It consists in the extent to which the strata on the flanks of the Alps have been folded, contorted, and inverted by the tremendous forces that led to the elevation of these mountains. The typical structure of the Alps is seen, for example, at St. Gothard, where what is known as the fan structure, due to the enormous lateral compression which accompanied the elevation of the Alps, is very well seen. There the central core crops out at the summit of the ridge, and the strata on each side of it, north and south, dip inwards towards the base, so that when seen in section they would present the appearance of the blades of a fan radiating from a single point.1

The minerals of Switzerland are far from abundant. The most widely diffused is *iron* ore, which is worked at various places. Salt is obtained at Bex, a little above

<sup>&</sup>lt;sup>1</sup> On the "Building of the Alps," see Professor Bonney, Nature, vol. xxx. 1884, pp. 44, 65; also Sir J. Lubbock, The Scenery of Switzerland, 1896, more particularly pp. 301-303.

the Lake of Geneva, from deposits of Jurassic age; asphalt in the Val de Travers in the canton of Valais; sulphur near Lake Thun. Aryentiferous copper and lead ores were formerly worked in the Grisons. Mineral springs of great celebrity are pretty numerous, the most noted being those of Leuk (Louèche) in the canton of Valais, Pfeffers, or Pfävers, in St. Gall, St. Moritz in the Engadine, and Baden and Schinznach in Aargau.

## 7. Climate and Vegetable and Animal Life

The great differences in elevation in Switzerland necessarily cause great differences in the climate, and more especially in the temperature. At places situated north of the Alps, such as Zürich and Bern, the normal winter temperature is about 30° F., the summer temperature from 50° to 64° or upwards; at Geneva the corresponding temperatures are as high as 33° and 66°. Some of the high-lying valleys, on the other hand, have a range of temperature which fully justifies the description that has been jocularly given of their climate, as one characterised by nine months' winter and three months' cold. This is especially the case with valleys that are open to the east and closed to the west, like the little valley of Urseren between the Furka and the road across the St. Gothard, and the valley of the Engadine in the south of the Grisons. At Sils Maria, in the upper part of the latter valley (5900 feet above sea-level), the mean January temperature is  $17\frac{1}{2}^{\circ}$  Fahr., the mean July temperature only 53°, and the mean of the whole year  $34\frac{1}{2}^{\circ}$ . In general the valleys have a severer winter than mountain peaks of equal elevation, the reason being that the colder and therefore heavier air steadily sinks down to the bottom of the hollows. One notable feature of the confined valleys of Switzerland, as well as of other mountainous regions, is the prevalence of calms. same is true even of isolated summits, such as the Rigi Kulm, which is protected on the south and east by still higher mountains; and, indeed, at the majority of Swiss stations the number of calms exceeds that of all the winds put together.1 In the higher valleys this condition is also accompanied by dry clear weather, especially in winter, and it is this circumstance that makes such cold places as Davos-Platz, in one of the high valleys of the Grisons, a suitable resort for certain classes of invalids suffering from lung disease. Some of the valleys opening to the north, and especially the valley of the Reuss, have a much warmer climate than the adjoining districts, in consequence of the prevalence of the warm föhn, or snow-eater, which is an exceptionally dry wind.

The flora of the Alps is one of peculiar interest. Like all great ranges of high mountains, the Alps harbour a considerable number of plants found nowhere else, and of those which are found elsewhere the majority do not reappear in the plains and valleys beneath, but in distant mountains or in the Arctic Regions. Out of upwards of 800 species belonging to the Alps, but not to the adjoining lowlands, nearly one-fourth are absolutely restricted to these mountains, and nearly a fifth are found also in the Arctic Regions, these being what are hence known as Arctic-Alpine plants.

Here as elsewhere the elevation of the mountains causes a gradual change in the aspect of the vegetation as we ascend. In the valleys at the base the chestnut and the walnut grow freely even on the north side, while in the valleys opening to the south, towards the Mediterranean, we enter the zone occupied by these

<sup>&</sup>lt;sup>1</sup> Dr. Alex. Supan, Statistik der unteren Luftströme, p. 80.

trees while still at a considerable elevation. As we ascend higher we come to the zone of the beech, maple, and other ordinary foliage trees reaching to about 4000 feet, and then the zone of firs and pines rising about 1000 feet higher. This zone is followed by one of Alpine shrubs, among which rhododendrons (Alpine roses, as they are locally called), heaths, and whortleberries are conspicuous, along with larches, and two species of pine, the dwarf-pine (Pinus pumilio), and the cembra-pine, remarkable for its edible seeds, this last peculiar to this zone. The shrubs cease to grow at about the height of 7000 feet, but the Alpine plants that cover the pastures intermingled with the shrubs ascend to the snow-line, and often beyond in places too steep to allow the snow to lie, and otherwise fit for vegetation. On the peaks of the Grisons, Heer collected about 100 different species of flowering plants at stations above the snow-limit, there situated at about 8500 feet; 24 species were observed by Martins upon the Grands Mulets on Mont Blanc, at the height of from 9890 to 10,600 feet; 1 and in the month of August the sides of the Pizzo Centrale on the St. Gothard have been known to diffuse to a considerable distance the fragrance of the flowers with which they were covered in patches. One of the most admired, but most retiring of these snowloving plants is the celebrated edelweiss, which all Alpine tourists are so anxious to add to their souvenirs of the country. No belt of cryptogamic plants separates the flowering plants from the snow-line, since the moisture that gradually trickles from the edge of the snow and ice soon becomes sufficiently warmed to admit of the development of plants of higher organisation.

<sup>&</sup>lt;sup>1</sup> Grisebach, Vegetation der Erde, i. 173, 174.
<sup>2</sup> Gnaphalium leontopodium,

The great variety of species to be found in many places within a limited area on the Alps is very noteworthy. On various points on the slopes of single mountains it is not difficult to collect hundreds of different species, and even on stony and rocky slopes not well suited to vegetation, where accordingly the amount of bloom is very limited, the number of species that may be obtained is sometimes very considerable.



EUROPEAN MARMOT.

Among the members of the Alpine fauna we need note particularly only the marmot, a peculiar rodent which inhabits burrows on the mountain-sides near the edge of the snow-line, and has a peculiar habit of sitting erect on its hind legs, on the watch against enemies, when it comes out of its burrow to enjoy the sunshine.

# 8. Government—People -The Romansch or Ladin Race and Language

Amongst the various political forms of government developed in Europe that of a federal republic has been

realised by the neutral state of Switzerland alone. It consists of a confederation of twenty-five independent little cantons, or half-cantons, as they are called, mostly named after their chief towns, and governed each according to the constitution best suited to its own requirements. In these various constitutions there are gradations from the fullest democracy to the purest representative forms; but pure non-representative democracies have been adopted in the smaller cantons only, such forms of government being in fact impracticable except amongst small populations. The referendum is a feature of the constitution of the whole federation and of some of the cautons.

The bulk of the population is of Teutonic race, but the Latin race (represented partly by French, partly by Italians) makes up nearly three-tenths of the whole. The Swiss Teutons belong to the Alemannic stock, and still speak a difficult Alemannic dialect, usually called Swiss German, or simply Swiss. They occupy the whole of the upper Rhine valley, as far as its extreme western angle at Basel, consequently the whole of the Helvetian highlands lying north of the central Alps, besides the upper Rhone valley as far down as Sion or Sitten, under the Bernese Alps. The remainder of the upper Rhone valley and the western slopes of the Jura are French; this region comprising the cantons of Valais, Vaud, Geneva, and Neuchâtel. Lastly, those parts of Switzerland which belong to the basin of the Po-that is, the whole of the canton of Ticino and the valley of Poschiavo in the Grisons-make up the Italian domain.

In the sunny valleys of the Grisons, along the head streams of the Rhine, and in the region between these rivers and the banks of the upper Inn, and even still farther eastwards, in some Tirolese valleys beyond the Swiss frontier, we find the Romansch-speaking people, whose language at first sight seems like a sort of connecting link between German and Italian. The language has two main dialects—the Oberland dialect or Romansch proper, spoken on the Vorder-Rhine and in parts of the Hinter-Rhine basin, and divided into two sub-dialects—the Sur-selvian and Sub-selvian, separated by the forest of Flims, and the Engadine or Ladin spoken in the valley of the Inn.

The question whether, and how far, the Rhæto-Romance race is connected with the old Rhætians can here be no more than referred to. It is, however, on the whole, probable enough that they are a mixture of the Romans, who, between the years 16 and 12 B.C., completed the subjection of the Alpine highlands, maintaining their supremacy there till the time of the Teutonic migrations, and of the aboriginal populations of those regions spoken of by the old writers under the name of Rhætians. These Rhætians were formerly far more widely diffused than at present. Numerous local names. scattered all over the Tirol, still bear witness to their former presence in that province, and the present Ladins of the south-eastern valleys of Tirol are kinsmen of the inhabitants of the Grisons both in blood and speech. However, the mixed Rhæto-Romance populations elsewhere yielded in "the struggle for existence" to the vigorous Teuton tribes, a pure race pressing upon them from two directions—from the north as Bayuvars, and from the south as Longobards (Lombards), surging up through the valley of the Adige or Etsch. They thus became at last confined to the solitary upland valleys, where they still continue to eke out a laborious existence. Their speech too is steadily yielding to encroachments both from the north and south, and is gradually getting supplanted either by German or Italian. At the census of 1880 the percentage of the population speaking any of the dialects of Romansch was 1.36, at that of 1910 it was 1.1. They are one of the most instructive illustrations of the struggle for existence in the domain of ethnology.

# 9. Agriculture—Industries—Chief Towns: Geneva, Bern, Basel

The Swiss depend for their support on various branches of industry. In the lowlands the chief occupations are agriculture, horticulture, and winegrowing. The last is carried on to a greater or less extent in twenty cantons, but yields the largest returns in the neighbourhood of the great lakes of Geneva, Neuchâtel, Zürich, and Constance. Nearly all the towns, with their various industries, are also situated in the lowlands.

The silk industry, which owes much to the railways through the tunnels into Italy, is well developed on the plateau; cotton textiles and machinery are made in the north-east, and watches, clocks, and jewellery in the Jura valleys and at Geneva.

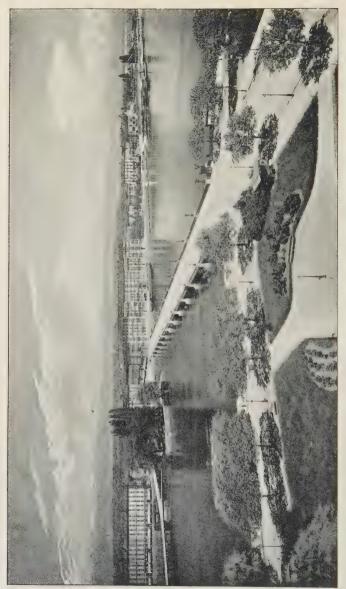
Foremost amongst the few important towns in Switzerland is Zürich, which has risen to this position since 1870. Situated in the north-east of the Swiss tableland at the issue of the Limmat from the Lake of

A separate population is returned for Zürich in the narrower sense, but this has no geographical significance. The so-called "Zürich proper," with its nine suburban communes (which it is needless to enumerate), all within 2 miles of the outlet of the lake, form only one urban centre, the population of which in 1850 was 33,600; in 1870, 56,000; and in 1920, 207,000.

ZURICH.

Zürich and at the place where that river is joined by the Sihl, it is a town of great antiquity. Its name, which appears in the second century A.D., under the Latinised form Turicum, is of Celtic origin, being derived from dur, meaning "water." It was greatly favoured by the Frankish emperors, and among its public buildings it still possesses a Romanesque cathedral of the eleventh to the thirteenth century. It belongs to one of the chief manufacturing districts of Switzerland, and is itself an important manufacturing town, producing chiefly silks and cottons. In connection with its manufactures may be mentioned its excellent polytechnic institute, founded in 1861, nearly thirty years after its university, which dates from 1832. Next in size is Geneva, another ancient town, in the time of Julius Cæsar one of the chief cities of the Allobroges, and even more celebrated historically than Zürich, but now one of the least progressive places in Switzerland. Its name, which among the Romans had the form Genava, is also referred to a Celtic root, gen, meaning "mouth," and is due, therefore, to its position at the outlet of the lake of the same name, once celebrated as "the Calvinistic Rome," but now better known as a seat of gaiety and a centre of science and learning. It is the seat of a university academy founded by Calvin in 1568, and as a manufacturing town it has long been noted for its watches and chronometers. Among its most eminent citizens, either by birth or adoption, are Calvin, Beza, Saussure, Necker, and Rousseau. Its internationalism has been manifested by the foundation of the Red Cross

<sup>&</sup>lt;sup>1</sup> Pop., including Plainpalais and Les Eaux Vives (1850), 36,600; (1870), 58,000; (1888), 72,000. Between 1880 and 1888 there was a small decline in the population of Geneva due to excess of deaths over births, and the net increase (4900) was therefore due entirely to immigration. Pop. (1920), 135,000.



GENEVA AND THE RHONE.

Societies, and by its use as a nursery for the infant League of Nations. The only other town in Switzerland with a population of more than 50,000 is Basel, which is also an ancient town occupying a well-defined geographical situation. It stands on the left bank of the Rhine where that river suddenly changes its course from westerly to northerly, about the place where the Rhine valley begins to expand between the Black Forest and the Jura, exactly opposite the point whence the valley of the Wiese leads up into the heart of the Black Forest, at the confluence of the Birsig, and a little below where the much more important valleys of the Birs and the Ergolz open on the Rhine from the Jura. Its name, most probably derived from the Greek βασίλεια, and referring to the fact of its having been at one time a Roman imperial residence, now has the two forms of Basel (German) and Bâle (French). It is the seat of a university founded in 1460, and as a manufacturing town is noted for its silk ribbons. Bern, the federal capital, ranks only fourth in point of population, and owes its status as capital, partly to its central situation in the Swiss tableland, partly to the historical importance of the canton, which is itself a result of that position. It stands on a platform washed on three sides by the Aar, which is here forced to make an abrupt bend to the east. Its cathedral, begun in 1421 and finished in 1598, stands near the middle of this platform. terrace to the south, known as the Münsterplatz, rises abruptly 360 feet above the river. The name of the town, the popular etymology of which (from the German Bären, "bears") has caused the bear to be selected as the municipal crest, is probably connected with the Celtic

<sup>&</sup>lt;sup>1</sup> Pop. (1850), 27,300; (1870), 44,000; (1920), 136,000. <sup>2</sup> Pop. (1850), 27,600; (1870), 35,500; (1888), 46,000; (1920), 104,000.

I'm' on our to, That

bryn, a ridge, which appears so often in Welsh names. Among other towns may be mentioned Lucerne, or Luzern, at the outlet of the Lake of the Four Forest Cantons, in the heart of the most beautiful mountain scenery of Switzerland; Lausanne,2 on a height close to the north bank of the Lake of Geneva, celebrated as the residence of Gibbon when engaged in writing his History of the Decline and Full of the Roman Empire, and the industrial towns of Chaux de Fond and St. Gall. La Chaux de Fond 3 is the chief watch-making town of the Swiss Jura, and St. Gall 4 the chief centre for Swiss embroideries. Small as both those towns are, their rapid growth indicates the prosperity of both industries. Even more noteworthy, perhaps, are the cotton and other manufactures of Glarus, as illustrating the manner in which industry and intelligence can triumph over natural disadvantages. Carried on in a remote mountain valley in the very heart of Europe, where only a fifth part of the surface is fit for the plough, and where the inhabitants have to make the torrents and waterfalls compensate for the absence of fuel as a motive power, their products are nevertheless sent to the farthest east and the farthest west, to China and America, as well as to the nearer parts of Europe and Africa. This industry is of old date, but it is worthy of note that the Swiss take a leading place in the application of water-power to the development of electricity. At Oerlikon near Zürich, dynamos are made in great numbers, and at Rheinfelden the rapids of the Rhine have been utilised for the development of electricity to supply light and

<sup>&</sup>lt;sup>1</sup> Pop. (1850), 10,000; (1870), 14,400; (1920), 44,000.

<sup>&</sup>lt;sup>2</sup> Pop. (1850), 17,100; (1870), 25,800; (1920), 69,000.

<sup>&</sup>lt;sup>3</sup> Pop. (1850), 12,600; (1870), 19,600; (1920), 38,000. <sup>4</sup> Pop. (1850), 11,200; (1870), 16,500; (1920), 70,000.

power to a wide district round, both in Switzerland and Germany. In its more recent industrial expansion northern Switzerland is also taking advantage of its situation at the convergence on the middle Rhine valley of the two great commercial highways leading from Marseilles (through Geneva) and Genoa (through the St. Gothard).

In the highlands almost the sole industry is the rearing of live stock—sheep, goats, and cattle. Many of the upland grazing-grounds, the "Fore-Alps" (locally Maiensässen), as they are called, are further utilised for cattle-breeding and the production of butter, cheese, and milk, carried on in a very efficient manner. Mention may also be made of the numerous hotels, supported by the vast number of strangers annually attracted to the Alpine regions by their romantic scenery.

## CHAPTER VIII

### BELGIUM

## 1. Relations to Surrounding Countries

Belgium is in a marked degree a country of transitions. Separated from none of the surrounding countries by any well-marked physical features, unless we note under this head the two unbridged portions of the Meuse which in Limburg now divide it from the kingdom of the Netherlands, it presents within a limited area (about one-eighth of the extent of Great Britain) and within a very moderate range of elevation some marked contrasts of surface and geological structure, and all these it shares with one or other of the adjoining countries on the north, east, and south. Moreover, it is traversed by the dividing line between the Teutonic and Romance families of languages -- a testimony to the fact that this region of transition, in respect of physical features, has been the scene of conflict between different races. Historically the uncertain character of its geographical position has been borne out by changes in the political relations of the territory now composing the kingdom, though some of these changes (the early association with

<sup>&</sup>lt;sup>1</sup> Area, 11,752 sq. miles; population (1880), 5,520,000; (1890), 6,069,000, showing a mean rate of increase of 0.95 per cent per annum; (1900), 6,815,000; (1921), after the boundary revision in the Treaty of Versailles, 7,462,000.

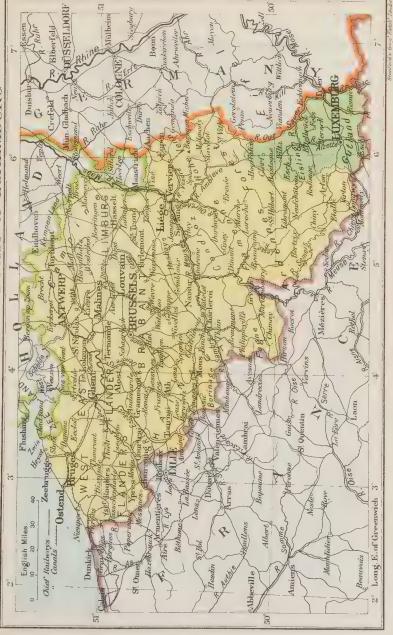
the German Empire and the recent connection with the kingdom of the Netherlands, as well as the cession of part of Flanders to France) may be regarded as directly illustrating its various geographical connections, while others, such as the union with Burgundy and the consequent annexations to the dominions of Austria and Spain, must rather be regarded as among the freaks and accidents of history.

Belgium has also been called a buffer state, in reference to its de jure neutrality in the antagonism between Germany and France, a de facto situation which was unequal to the strain of modern war; it is perhaps better to regard the country as a nodal zone, an area of convergence of conflicting interests. Along one line the sea edge suggests one line of traffic; along another the edge of the old block mountains of Europe with the resultant coal-fields and consequent zone of dense population suggests a second line of interest which crosses the sea to London; the line of the Great European Plain, the lines of the Meuse and the Rhine valleys, all meet in Belgium. In certain respects the country is an artificial creation within the nodal zone; one natural unit. Flanders, begins in France and ends in Holland: the grand-duchy of Luxemburg is severed from the Belgian province of Luxembourg: Maestricht is Dutch, and Givet. is French.

## 2. Physical Features of Upper Belgium

The territory of Belgium slopes, on the whole, from south-east to north-west. The region lying to the south-east of the well-marked line of the Sambre and Meuse may be designated Upper Belgium and is mainly composed of Devonian slates, which it shares with

# BELGIUM AND THE GRAND DUCHY OF LUXEMBURG





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France, Luxemburg, and the Prussian Rhineland. Within historical times this region formed, except in its valleys, one vast forest — the Forest of Ardennes, of which extensive tracts still survive, and it is traversed by the heights of the Ardennes in a more restricted sense running right through the country from France into Rhenish Prussia. Though mainly of Devonian age, these heights within Belgian territory toward the eastern frontier are partly composed of ancient, nonfossiliferous, crystalline slates, and similar rocks form the bleak plateau of the Hohe Venn, which stretches from Belgium into Rhenish Prussia farther north. It is to this plateau that the highest altitude of Belgium belongs, namely, the Baraque St. Michel (2205 feet), on the German frontier, close beside the road from Verviers to Malmédy. The surface of the slaty region is, for the most part, gently undulating, but north-west of the Ardennes proper there is a somewhat lower tract surmounted in places by blocks and ridges of limestone, which impart in places a picturesque aspect to the scene. Such is the depression of the Famenne, in the valley where the Meuse breaks through Upper Belgium from the south, and still more that of the Hautes Fagnes, a deeply incised plateau in the Devonian strata. Farther north still, in the Condroz between the Meuse and the Ourthe, is a series of parallel ridges and valleys.

The line of the Sambre and Meuse is composed of a deep but narrow and steep-sided valley, which is typical of the valleys of Upper Belgium generally. Especially so is the portion belonging to the Sambre, with its continuous succession of loops intersecting the flat meadows forming the bottom of the valley. Such also are the valleys of the Semois, the Lesse, the Ourthe, the Amblève, and the Vesdre or Weser, all of which belong to

the same basin. Some of them, such as the Ourthe, the Amblève, and the Vesdre, as well as the Meuse (throughout its course in Belgium) and the Sambre, are very important as marking the natural lines for roads and railways through these higher grounds, while, on the other hand, in the case of the Semois, the narrowness and tortuosity of the valley are carried to such an extreme as to make it rather an impediment than an aid to communication. Upper Belgium forms part of the Ardennes-Eifel massif, across which the valleys of the Meuse and Rhine are cut as accidental erosion trenches.

## 3. Middle Belgium

The line of the Sambre and Meuse is important not merely as a surface feature, but also geologically, inasmuch as the rocks on both sides form a narrow strip of Permian and Carboniferous deposits (with productive coal-measures), partly traversing and partly lying on the outer border of the more ancient Devonian rocks. The region lying immediately to the north-west is generally of lower elevation than that to the south-east, but as far as the Lys to the west and the Demer to the east of the Scheldt, has for the most part an elevation of 150 to 600 feet, and hence may be described as Middle Belgium. Here the prevailing slopes are towards the north and west. Only a narrow strip is drained southeastwards to the Meuse, all the rest belonging to the basin of the Scheldt. The surface consists in the southwest partly of Devonian rocks, but is mainly composed of those of Tertiary age, associated, however, with Cretaceous deposits in the north-east. The soil in this part of Middle Belgium -that is, the tract between the Meuse and the Great Geete, known as the Hesbaue (west of the city of Liége)—is of exceptional fertility, and peculiarly adapted for the growth of wheat. It is composed of a light loam, rich in lime, resting on a firm basis of clay. Farther west, between the Great Geete and about the meridian of Brussels, the loamy soil is not so continuous, and the subsoil is mainly composed of dry sand, so that this tract is not so fertile; but still farther west clay forms the prevailing soil, which is adapted and utilised for a great variety of crops, including cereals, sugar-beet, hops, chicory, etc. Middle Belgium is characterised by an important geological feature. The younger rocks cover the worn-down surface of an old mountain system which has been more completely eroded than the Ardennes; the older rocks are exposed in the upper valleys of the streams which cross this low plateau to the Scheldt.

## 4. Flanders 1

The remainder of the country forms Flanders, stretching along the sea between France and the Netherlands, and then all along the border of the latter kingdom, which it resembles in the character of its soil and surface at all the parts which it touches, comprising, like it, an area below the level of mean-tide. This area, about 280,000 acres or 440 square miles in extent, lies near the sea-coast and the western part of the Dutch frontier, and would be submerged at every tide if it were not protected by a line of sand-dunes, which is continued from France to the Netherlands all along the Belgian coast. Its length in Belgium is  $41\frac{1}{2}$  miles, its greatest width (in the south-west, not far from Nieuport)  $7\frac{1}{2}$ -8 miles, its average height 50-80 feet, and its greatest

<sup>&</sup>lt;sup>1</sup> The name Flanders is here used in a geographical sense for the coastal plain which extends from Calais to the mouth of the Scheldt.



CONFLUENCE OF THE SAMBRE AND MEUSE AT NAMUR.

height, in the extreme south-west, 115 feet. Only three openings in this line are maintained for the drainage of the region behind-at Nieuport, Ostend, and Heyst; and the mouths of the streams which here find an outlet have to be artificially kept from silting up or. being stopt up by the deposit carried by marine currents, and at high tide have to be closed by sluices against the sea. The whole area that has thus to be protected against submergence is divided by means of dykes or embankments into enclosures, called polders, which are artificially drained by steam-engines or wind-mills, the drainage water being pumped into canals running along the embankments and communicating with the rivers. Flanders is essentially a product of the sea. After the cutting of the Strait of Dover, the set of the currents caused deposition of sandbanks in a south-west north-east direction, typified to-day by the set of the rivers and the lie of the sandbanks off the coast; accumulations of alluvium and a retreat of the sea left the plain of Inner Flanders flanked by the coastal dune belt, where the harbours are artificial, requiring constant dredging, and where the sea at high tide is withheld by closed sluices. Here an infertile soil has been made productive by the "spade" tillage of generations of industrious Flemings.

An adjoining area on the east and south, of about 1350 square miles in extent, making up the greater part of the remainder of the lower parts of Flanders, is mostly covered with a sandy soil. This, however, rests in the south on a subsoil of clay, and in the north is overspread with a thin covering of loam, both rendering the soil capable of improvement, so that by the industry of centuries this has been made one of the most fertile districts of Europe. From about one-fourth of the area

two crops are reaped in the year, some corn crop being followed by clover or beet.

## 5. The Campine

East of the Scheldt lies a tract of about 1900 square miles in extent, composed mainly of sandy soil to a considerable depth, and hence forming the least fertile and populous region of Belgium. Like many other sandy areas, this soil is hardened in places by infiltrations, which cause the sand to cake and form a crust almost or quite impenetrable by the roots of plants. Here such incrustations are due to a hydrated oxide of iron. This area is what is known as the Campine, or, in Flemish and Dutch, Kempenland, and is, in fact, the westernmost part of the qeest, which, besides making up the greater part of the Belgian provinces of Antwerp and Limburg, passes through Holland and lies behind the marshland of the north German plain from the Dutch frontier to the Elbe. In Belgium much of this land is still utterly waste, though reclamation has in recent years been actively carried on, and about one-fifth of the surface is covered with pine forests.

More than two-thirds of the Belgian lowlands is drained by the Scheldt and its tributaries, only small tracts being drained by the Yser direct to the sea, or in the east into the Meuse. All the rivers are sluggish, winding streams, well adapted for navigation or the supply of navigable canals, which in Western and Northern Belgium form important means of communication, and make possible a future traffic development beyond the frontiers of Belgium in both a westerly and easterly direction to complete an unique system of waterways over the western section of the Great Plain of Western Europe.

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## 6. Minerals

Upper and Middle Belgium are remarkably rich in minerals and, above all, in coal. The situation of the coal-fields has already been roughly indicated, but some details are important and interesting. The Carboniferous area forms a strip of about 500 square miles in extent, occupying the valleys of the Meuse and Sambre from about Liége to Charleroi, and stretching thence westwards across the French frontier, and the chief coalmining districts are in the neighbourhood of Liége, Charleroi (La Louviére), and Mons. The whole area has been very much disturbed and contorted. A great fault extends from Liége to Boulogne, and the rocks to the south-east of that line have been pushed over those to the north-west, so that in several places coal is mined under Devonian strata, and near Namur it is even found under those of Silurian age. These great movements have led to the formation of many minor faults in the coal-seams themselves, as well as to much folding of the seams, which thus have in many places an exceptionally high dipping angle. The seams, moreover, are not generally thick, mostly only from 2-3 feet, seldom more than 6 feet, and as their working has been carried on for centuries (in part since the thirteenth century) the mines are generally very deep. In 1894 the average thickness of the worked seams was 2.09 feet, and the depth of the mines 1400 feet. These conditions require the drainage works to be on an exceptionally large scale, and for all these reasons the working of coal in Belgium is generally difficult and expensive. Before 1909 Belgium produced, notwithstanding its extensive metallurgic and textile industries, more coal than it required

for its own wants, its annual export being about four times as great as its import of this commodity. The amount of coal produced in the country increased from about 2,600,000 tons in 1835 to about 24 million tons in recent years. The rate of increase of production is now very slow; but a new coal-field has been slightly exploited since 1902 in the Campine between Dutch Limburg and Antwerp. Here are important reserves of coal which will be of increasing value in future years.

Iron ore, which occurs principally near Namur, partly to the north of that town, partly in the angle between the Sambre and the Meuse to the south, has not been worked for many years, and the iron industry of the country is now largely dependent on ore brought from Luxemburg. Small deposits of ore and the bog ore of the Campine yield a total of about 200,000 tons of iron ore annually, merely a quarter of the amount mined in 1860. For use in the iron and steel works Belgium relies upon Luxemburg for about half its iron-ore and supplements this import by smaller quantities from Spain and Norway. In addition quite a considerable quantity of pig iron is obtained from abroad, from Britain, France, and Germany.

Zinc mining is important in the Aachen district; the Treaty of Versailles gave to Belgium the districts of Eupen, Malmédy, and Moresnet, where the deposits of Vieille Montagne and Bleiberg are a valuable asset to Belgium. These acquisitions strengthen the position which Belgium has long held as one of the world's chief sources of zinc ore and zinc products. The ores are treated in two districts, the one in the neighbourhood of Liége and Charleroi along the Sambre-Meuse valley, and the other in the Campine, at Baelen-usines, Lommel.

Primary rocks are quarried for slates in Namur

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province, and paving-stones in many districts. Limestones and clays are quarried for lime-burning, pottery, and other industrial uses.

## 7. People-Walloons and Flemings

The kingdom of Belgium has been artificially welded together out of two distinct elements at least in respect of language, but how far this difference of language indicates a difference of origin has long been and still is a matter of dispute. The name of the kingdom proves nothing, for though it is of ancient origin there has been no continuity in its application. It was not in use in the Middle Ages, and was revived only in modern times. Moreover, it is not merely a matter of controversy whether the two linguistic elements of the present population, the Walloons of the south, speaking either French or a language essentially the same as French, and the inhabitants of the north, speaking a language essentially the same as Dutch, although distinguished by some peculiarities and known as Flemish, represent two originally distinct races, but also to what race the ancient Belgæ of Cæsar themselves belonged, whether Celtic or Teutonic. What is certain is that the prevalence of two languages in different regions of the territory now forming the kingdom of Belgium is a thing of old standing. It is likewise certain that the Walloon, like the French, is due to the ancient Roman influence which reached as far north as the mouth of the Rhine as that river flowed in ancient times.

Hence Walloon is by no means a corrupt French, although, since the political supremacy of the Burgundians, to a large extent displaced by that language. It shows greater affinity rather with the Romance of several Swiss cantons, and with the Tirolese Ladin or Rumonsh. In

some rural districts of Belgium the two elements are so blended together that a Walloon often adjoins a Flemish village, or else both are separated only by the intervening highway. For hundreds of years the two races have thus dwelt together, for hundreds of years they have lived through the same political vicissitudes, but to the present time no intimate union has taken place between them. This deep contrast between speech and national usages has outlived the Revolution of 1830, notwithstanding all their common institutions and interests, and the belief is very general that these interests and their common freedom are the only ties that hold them together. A line drawn from Bailleul through Courtrai and Tirlemont to Maastricht will roughly divide the Belgian territory according to the two forms of speech prevailing in it, though, as is evident from what has been stated, there are isolated Walloon groups north of this line, as there are Flemish to the south-east of it. In Brussels both idioms meet on common ground, the upper town being decidedly French, the lower Flemish. French, however, is the official language of the country and of the Government, even though the capital, as shown on the accompanying map, belongs to the Flemish portion of the country.

In order to form a correct estimate of the political and social situation in Belgium, it is necessary constantly to bear in mind the ethnical relationship of the Flemings with the Dutch. At the Congress of Vienna the seeds of dissension were sown by comprising within the then constituted kingdom of the Netherlands the Walloon domain, instead of transferring it to France, to which it naturally belonged. The differences of habits, customs, and especially of religion, contained the germs of endless future discord. As almost everywhere else, here also the

<sup>&</sup>lt;sup>1</sup> See map at p. 54.

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south was Catholic, the north Protestant. To the former confession adhere both the Teutonic Flemings and the Celtic Walloons, and the kingdom of Belgium, as now constituted, is one of the most Catholic countries in the world. Hence the antagonism between north and south betrayed itself with the greatest bitterness, first of all in the Church, and then in the army and the States-General, resulting at last in the violent severance of Belgium from the Protestant Netherlands in 1830. But scarcely had the new kingdom been established when the national antipathies were again manifested. The Catholic clergy had no doubt skilfully availed themselves of the Walloons and French, out of whose ranks the most enlightened and energetic spirits had arisen. But once their independence was achieved they took a decided part with the Flemings, who now formed the majority, and who demanded that the new nationality should be based on their speech. In truth, but for the efforts of the lower clergy in previous times, Flemish would have long since sunk to the position of a mere patois. However, notwithstanding the attention they have since paid to their national literature, the Flemings have been hitherto unable either to set aside the French language in Belgium, which continues to be the idiom of all the upper classes, or yet to acquire the political position due to their numerical ascendancy.

Of all the European states, except the kingdom of Saxony, Belgium has the largest relative population. The region with the sparsest population is that lying to the south-east of the Sambre-Meuse and Vesdre valleys—that is, Upper Belgium, and it is there also, and in Limburg, that the rate of increase of population is lowest—lowest of all is the province of Luxembourg in the extreme south, where the density of population

is under 126 to the square mile. In the western provinces, East and West Flanders, and Hainaut (not-withstanding the productive coal-mining and active industries dependent thereon in the last-named province) the rate of increase of population is also considerably under the average for the whole kingdom, the highest rate being found in the provinces of Brabant, Antwerp, and



A BELGIAN MILK-CART.

Liége, and chiefly due to the rapid growth of the capital of the kingdom, the chief seaport, and the most prosperous industrial centre. From this account of the distribution of population it is clear that the population is denser in the region where Flemish is spoken than in that in which the Walloon element predominates, but it is equally obvious that this is due to physical conditions and not to ethnical and linguistic differences.

## 8. Chief Towns and Industries

In Roman times the present Belgian territory was of little importance, and yet when provinces now forming the west of Belgium did begin to rise into wealth and consequence they did so from an influence that has been operating from the earliest period of the commercial history of Europe, but one whose action has been variously modified by changes in physical as well as political conditions. The influence referred to is that of the great waterway of the Rhine, which has never ceased to be a great highway of commerce since its mouths first gave access to regions furnishing commercial commodities in the time of the ancient Etruscans. In Roman times, however, the chief towns affected by this waterway were confined to the river itself, the advantage of which was, moreover, much diminished by the fact of its being in its lower course a frontier stream, whose right bank was occupied by barbarians. Then the south-east of Belgium, including the valley of the Sambre-Meuse, appears to have been in Roman times too entirely a region of forest to have offered sites for towns. Hence, perhaps, the only place that can be named in Belgium which had any great importance in the early centuries of the Christian era is Tongres or Tongern, in the fertile Hesbaye, the city of the ancient Tongri. This was afterwards capital of the Provincia Germania Secunda, and it was seat of a bishop from an early period, but deprived of its rank soon after the foundation by one of its own bishops of the city of Liège, to which the bishopric was transferred in 720.

In Western Belgium the Flemish towns of *Bruges* and Ghent first came into prominence after a renewed stimulus had been given to commerce by the Crusades. By this

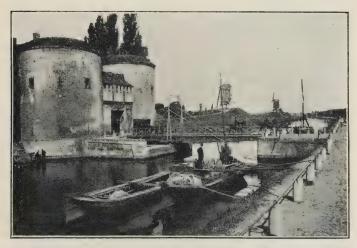
time great changes had taken place in the delta of the Rhine and Meuse, as is shown in the chapter on the Netherlands, and Flanders offered the only scaports in the vicinity of the region capable of maintaining a large population, and at the same time sufficiently near the mouth of the Rhine to profit by that waterway. Down to the latter part of the fifteenth century, and perhaps



BRUGES.

even later, a creek known as the Swyn or Zwin led from Kadzand, now in the Dutch province of Zealand, by Sluis to Bruges, and of this the harbour of Sluis, enlarged and improved by Philip Cornet of Flanders in 1311, formed an expansion stretching from Sluis to Damme. With this harbour Ghent also was in communication by canals if not, as some think possible, by the Lys itself, which then may have entered the Zwin instead of turning eastward to the Scheldt. The utilisation of these advantages for commerce served likewise as a stimulus for agriculture

and manufacturing industry. Then the flax of the Lys, which still furnishes the best of all materials for linen, began to be spun and woven for a wider and wider market, and then, too, English wool began to be woven in Flanders into garments for "all the world." Bruges, a great Hanseatic factory from the thirteenth century, was frequently the staple for English wool in the four-



THE GOLDEN GATE, BRUGES.

teenth century, down to the time when about the end of that century the staple was permanently fixed at Calais; and both Bruges and Ghent continued to be flourishing manufacturing towns, without rivals in Northern Europe, down to the time of the wars under Philip II. Throughout that period agriculture and the arts continued to advance more rapidly in Flanders and Brabant than anywhere else, so that these provinces became the instructors of England in nearly all branches of industry. As late as 1468, 150 merchant vessels are recorded to

have entered the port of Bruges at one time. Gradually, however, the Zwin got silted up, all the more rapidly in all likelihood in consequence of neglect in time of civil war and the consequent disorganisation of industry. Bruges, though still noted for its tapestries in the time of Colbert, decayed, and it has never revived. It was connected by canal with Ostend in 1736, and again with the sea by way of Sluis in 1817; but meantime sea-going vessels had become larger, and these canals could hardly restore to the town the rank of a seaport, and by no means that of a leading seaport. Bruges accordingly, which at the height of its prosperity is estimated to have had a population of 200,000, has sunk to one of about 50,000, and since 1846 it has been stationary or declining. At that date its population was 49,300, in 1880 it had sunk to 44,500, but in 1900 it had risen to 53,000. Now, however, a bolder attempt to revivify it has been made. In 1900 Bruges 1 was brought, by means of a ship-canal with a depth of 26 feet 3 inches and a bottom width of  $72\frac{1}{9}$  feet, into connection with Heyst or Zeebrügge, which has been made an outpost of Bruges, with a harbour planned to accommodate Atlantic liners. The latest development has been the use of Zeebriigge as the terminal of a train ferry originally planned to carry fast goods traffic from Harwich across the North Sea.

\*Ghent 2 (Gand), at the confluence of the Lys and Scheldt, has succeeded in maintaining a more important position among Belgian towns, partly no doubt in consequence of the navigation of these two rivers, which serve as waterways in three directions, the Scheldt here changing its course from north-east to east. Here also considerable physical changes have taken place. In the Middle Ages the site of Ghent was threaded by an intri-

<sup>&</sup>lt;sup>1</sup> Pop. (1921), 53,000. <sup>2</sup> Pop. (1921), 165,000.

cate network of channels connected with the two rivers just named; but though at all periods of history there seems to have been some connection between these two rivers at this point, the Lys, down to about the thirteenth century, was more properly to be regarded as the head-stream of the Durme (now an independent tributary of the Scheldt entering the main stream from the west



GHENT.

above Tamise), and the Lys-Durme then entered the Hont or Hontee or West Scheldt by several deltaic arms, more than one of which was navigable. One of these flowed nearly due north from Ghent by Ertvelde and Assenede, and entered the Hont by the wide creek known as the Braakman, but the most important was that which passed by Sas van Ghent to Terneuzen in Zealand. In 1180 the city became the capital of Flanders,

and in the beginning of the fourteenth century is said to have had 40,000 workers in woollens and linens. Linen manufactures it still retains, but the former woollens have been replaced by cottons (now the leading industry). The old waterway from Terneuzen has long been canalised, and since 1886 this canal has been large enough to admit vessels of 2500 tons burden, 171 feet draught. It is also connected by way of Bruges with Ostend by a canal of a minimum depth of 7 feet. The Terneuzen-Ghent waterway has been made available for vessels drawing about 20 feet, so as to afford increased facilities for the growing traffic, more particularly the export of sugar and beet to Great Britain, and the import thence of coal. In the event of the threatened accumulation of silt reducing the facilities at Antwerp, Terneuzen, although in Holland, will become more important than ever to Belgium. The population of the town has steadily increased from 103,000 at the end of 1846 to 161,000 at the end of 1900 (exclusive of its suburbs of Ledeberg and Mont St. Amand, which may bring up the total population to about 180,000).

Bruges and Ghent, at the height of their prosperity, had a rival in a third seaport, *Ypres* or in Flemish *Yperen*, now farther inland than either, and with a much inferior communication with the sea, the waterway formed partly by the Yser and partly by a canal connecting it with the insignificant port of Nieuport, having a minimum depth of only  $3\frac{3}{4}$  feet. In the thirteenth and fourteenth centuries flourishing woollen and linen manufactures were carried on here also, and the population is estimated to have reached 200,000; but though the linen industry still lingers on, the town languishes. *Courtrai*, in Flemish *Kortrijk*, on the Lys,

<sup>&</sup>lt;sup>1</sup> Pop. (1921), 37,000.

situated like Ypres at the base of the hill country of Flanders, but enjoying the advantage of better navigation, that river forming a waterway with a minimum depth of 7 feet, communicating not only with Ghent and through it with Antwerp and Terneuzen, but also with the canal system of Northern France. These advantages



HÔTEL DE VILLE, COURTRAI.

no doubt help to explain the growth of its population by upwards of 50 per cent between 1846 and 1890, at which latter date it numbered about 34,000. But a still more important circumstance contributing to the prosperity of the town consists in the fact that the waters of the Lys above Courtrai are peculiarly suited for the retting of flax, the fibre of which here acquires remarkable fineness combined with extreme tenacity. On this portion of the river from 12,000 to 15,000 labourers are employed during the retting season (April to October), and Courtrai is the centre

<sup>&</sup>lt;sup>1</sup> The waterway is shut against steam traffic during the retting season.

of the trade, and also carries on a considerable industry in spinning and weaving, though the fibre that is here spun is not, strange to say, the fine fibre of the district, but the coarser fibre of Russia. *Tournai*, in Flemish *Doornik*, on the Scheldt, to the south-east of Courtrai, is another manufacturing town, worthy of note as having been already mentioned in the first half of the fifth century as one of the Roman towns in the Carbonarian Forest, that part of the forest of Ardennes which lay between the Meuse and the Scheldt.

All the older Flemish ports have, for the time at least, been completely outstript by the modern port of Ostend<sup>2</sup> (Ostende), which has acquired importance since the establishment of lines of steamers in connection with the neighbouring ports of England. Its harbour facilities have been improved to cope with the steadily increasing traffic in passengers and goods. Its population increased from about 14,000 in 1846 to upwards of 24,000 at the end of 1890, and during the summer the population is greatly increased by the crowd of seabathing visitors attracted by the long stretch of smooth sand.

But all Flemish ports have for centuries been insignificant in comparison with the Brabant port of Antwerp, in French Anvers, at the head of the estuary of the Scheldt. Looking at the present configuration of land and water, and the soundings of that estuary, one sees that it could not now be otherwise, and what requires explanation is rather the fact that this city was so late in starting into rivalry with the ports of Flanders. It must be noted, however, that early in 1924 the alluvium brought down by the rivers grew to an alarming

<sup>&</sup>lt;sup>1</sup> Pop. (1900), 31,000; (1921), 36,000. <sup>2</sup> Pop. (1921), 45,000.

extent and threatened to exceed the quantity with which the equipment of modern dredgers could successfully cope. In earlier times the Flemish ports enjoyed advantages which they no longer possess, but the neighbourhood of Antwerp suffered from the disadvantage of being occupied by extensive marshes, which were only slowly



OSTEND.

reclaimed. This in itself would retard the growth of the inland cities of Brabant, and Antwerp, Brussels, and Louvain all grew up together. It was not till about the end of the fourteenth century, however, that Antwerp appeared as a rival of Bruges, and as Bruges was in a large measure identified with the English staple and the trade in English raw wool, the rise of Antwerp was to a considerable extent associated with that of the merchant adventurers of England and their trade in woollen manufactures. We may accordingly take the year 1406 or 1407, in which that corporation acquired a house in Antwerp, as an important fixed point in the beginning of its commercial history. Since then it has gradually risen to a leading place among the seaports of Northern Europe, but its position with respect to its Dutch rivals of Rotterdam and Amsterdam has been affected now by political and now by physical and economic conditions. In former days it reached the height of its prosperity in the sixteenth century, when the great extent of its commerce was recorded by Guicciardini in his Description of the Netherlands (1560). Like the other ports of the Southern Netherlands it suffered by the revolt of the northern provinces against Philip II. in 1579, since Zealand, which joined those provinces, commanded the mouths of the Scheldt, and their right to keep these mouths closed was secured to them at the Peace of Westphalia in 1648. Not till the period of French rule after the French revolution was this barrier removed,1 but under French domination and during the period of union with the Netherlands (1814-1830), the rapid rise of the port indicated the great importance of its natural advantages. Again its rise was checked by the separation of the Belgian provinces from those which still form the kingdom of the Netherlands, for this kingdom then reimposed a toll at the mouths of the Scheldt which subsisted till 1863. Only since then has the navigation from Antwerp to the sea been free from foreign imposts. About the same time, there were carried out great harbour works, to make room for which the old fortifications were levelled in 1859, and

<sup>&</sup>lt;sup>1</sup> The right was re-asserted during the Great War, when the lower Scheldt was closed against the Allies.



since then the commerce of the port, which is only 55 miles from the sea, has risen with striking and uninterrupted rapidity.

The decisive advantage of the port lies, as in the Thames, in the high tides which help to maintain a deep channel in the estuary, and thus enable vessels of large burden to ascend so far into the interior. The depth alongside some of the quays is at least 38 feet. Despite the extensive harbour facilities, the port is regularly overcrowded, and improvements, especially in reference to the river bend below the town, are projected. Four miles downstream from the city a huge lock is being (1924) built to connect with a sea canal and to give passage at any state of the tide to vessels drawing 40 feet of water. But Antwerp also has the advantage of a rich mining and manufacturing hinderland within the country to which it belongs, and this fact has greatly contributed to the maintenance of a successful rivalry with the Dutch port of Rotterdam. The population of Antwerp 1 increased from 88,000 at the end of 1846 to 117,000 at the end of 1866, and 286,000 at the end of 1900. Antwerp as the chief seaport is predominantly interested in the increasing development and growing trade of Belgium's tropical colony, the Congo Belge.

Of the inland towns of Brabant, Brussels and Louvain are those of most historical renown, both of them having been important manufacturing towns at least as early as the fourteenth century, and both of them at an early date seats of administration. Brussels lies on the margin of the hill country of Middle Belgium due south of Antwerp, and about midway between that port and the valley of the Sambre. The original nucleus of the city was an island in the small river Senne, the two arms of which enclosing the island are now concealed by the

<sup>&</sup>lt;sup>1</sup> Pop. (1921), 304,000.

BRUSSELS: THE BOURSE.

inner boulevards, but a suburb afterwards arose on the higher ground to the east, so that the escarpment of the hill country running through the city from south to north (St. Gilles to Schaerbeck) divides it into an upper and lower city. The first mention of Brussels belongs to the close of the sixth century. Before the close of the tenth century a castle was built here by the Duke of Lorraine, to whom it then belonged, and to whom the city owes its patron saint, St. Gudule, whose remains were brought thither by him in 980. The church 1 dedicated to this saint dates from 1273. About a hundred years later the city was surrounded by its first fortifications (1357-79), the lines of which are approximately marked by the present (outer) boulevards. Brussels first rose to its dominant position under the Duke of Burgundy, by whom, as well as by their Spanish and Austrian successors, it was made the seat of administration of the Netherlands, as since 1830 it has been the capital of the kingdom. It is to the influence of the Burgundian family that the upper town, which has always formed the residence of the wealthier classes, owes the use of the French language, the lower town, which is the commercial part of the city, having always remained Flemish in speech and characteristics. Though an inland town its outskirts are accessible by the Brussels-Willebroeck canal, which is being improved. Brussels is often termed "The Little Paris," a designation which is to some extent justified by its sumptuous buildings, its boulevards, and its suburban Forest of Soigne, which is much finer and more extensive than the Bois de Boulogne. As capital of the country it has shared in the prosperity not only of its port but also of the industrial towns of the southeast, but the growth of its population is not adequately

<sup>1</sup> Often erroneously called a cathedral, which it never was.

represented by that within the city limits. The Cougo Museum at Tervueren is one sign of the city's interest in the great colony. The city population increased from 124,000 at the end of 1846 to 176,000 at the end of 1890, and in 1900 the population of city and suburbs amounted to 562,000.

Louvain,2 which stands on the Dyle, and is connected



LOUVAIN.

by a canal admitting vessels of about 10 feet draught with the Rupel, and this with Antwerp, was in early times of even greater importance than Brussels. At the end of the tenth century it was the capital of the counts of Louvain, afterward dukes of Brabant, and at the beginning of the fourteenth century it was estimated to have a population of 100,000, including 30,000 or 40,000 weavers, besides tanners, skilled armourers, and other artizans; but internal dissensions led to the migra-

<sup>&</sup>lt;sup>1</sup> Pop. (1921), 775,000.

<sup>&</sup>lt;sup>2</sup> Pop. (1921), 39,000.

tion of large numbers of the working population and the consequent decay of the town, which was further accelerated by a plague. The university, which in the sixteenth century, when it numbered among its professors the celebrated anatomist Vesalius and Adrian of Utrecht, afterwards Pope Adrian VI., and among its students Erasmus and the Emperor Charles V., who had been placed under the tuition of Adrian, was the most famous in Europe, was founded in 1426 on the ruins of the former cloth market.

Of the towns of the basin of the Meuse Liège, in Flemish Luik, early acquired, and has always since retained, the first place in rank and population. Situated at the point where the road from the north German plain by way of Cologne and Aix-la-Chapelle enters the narrower part of the valley of the Meuse, in a position accordingly where there is still free communication with the plains to the north and north-west, -in a position. moreover, where the convergence of the valleys of the Vesdre from the east and the Ourthe from the south bring traffic from both these directions through Upper Belgium,—it could not fail to become an important centre of trade, to which manufacturing industry was naturally joined at an early date. A chapel was founded on its site in 558 by the Bishop of Tongres, and in 720 the town had already become a place of such importance that the bishopric was transferred thither. About the end of the tenth century the bishops established a strong temporal dominion, which lasted throughout the Middle Ages, though frequently at strife with a popular party. In modern times its importance has been confirmed and increased by the wealth of coal and iron in the neighbourhood, and though now dependent for most of its iron ore on supplies from the grand-duchy of Luxemburg, it is

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still one of the most important seats of the iron industry on the continent, and specially noted for the manufacture of firearms, chiefly by hand labour. Its population increased from 76,000 at the end of 1846 to nearly 175,000 at the end of 1900, but this is only the central portion of an urban population extending for 7 or 8 miles up and down the valley of the Meuse from Seraing above Liége to Herstal below the city, all largely,



LIÉGE.

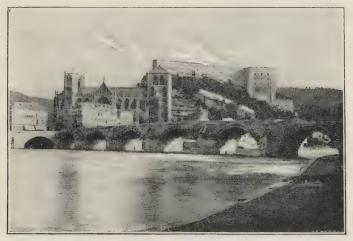
if not mainly, dependent on the iron industry in some form or other, and amounting at the end of 1890 to upwards of a quarter of a million. At Seraing <sup>2</sup> are the celebrated Cockerill coal-mining and iron-works, founded in 1817 by two Englishmen of that name, and noted for having made the first locomotive on the continent (1835); here Bessemer converters were set up in 1864.

To the east of Liége on the Vesdre stands Verviers,<sup>3</sup> a

<sup>&</sup>lt;sup>1</sup> Pop. (1921), 165,000. <sup>2</sup> Pop. (1921), 39,000.

<sup>&</sup>lt;sup>3</sup> Pop. (1921), 42,000.

town celebrated for its woollen industry at least as far back as 1432, and still producing as fine woollen cloth as is made anywhere. It exports also large quantities of woollen yarn (even to England) and washed wool, the water of the Gileppe, which supplies power to many of its factories, being peculiarly well adapted for woolwashing on account of its purity, and especially its freedom from lime. To preserve this property a dam



HUY.

has been erected across the stream a few miles above the town, just above the point where it enters a limestone district.

On the Meuse above Liége the confluence of two small streams, one from the north and one from the south, whose valleys mark out the route for a road and a railway through the Hesbaye and the Condroz respectively, has been, since at least the tenth century, the seat of the town of Huy, another town engaged in

metallurgy, including zine and tin-plate manufacture. Still higher the more important confluence of the Meuse and Sambre is marked by the town of Namur, in Flemish Namen. It also is a seat of coal-mining and iron-working, but during the last fifty years has been only slowly progressive. Much more rapid has been the growth of the coal-mining town of Charleroi,2 higher up the Sambre, where the population has grown from less than 8000 at the end of 1846 to about 25,000, to which should be added other 25,000 for the suburbs of Châtelet and Châtelineau. There are extensive ironworks in the Sambre valley both above and below Charleroi, and the district is important for its glassworks. Mons, Flemish Berghen, the chief town of the Borinage, as the great coal, iron, and glass-working district in the south of Hainaut is called, has a population about the same as that of Charleroi.

<sup>&</sup>lt;sup>1</sup> Pop. (1921), 31,000.

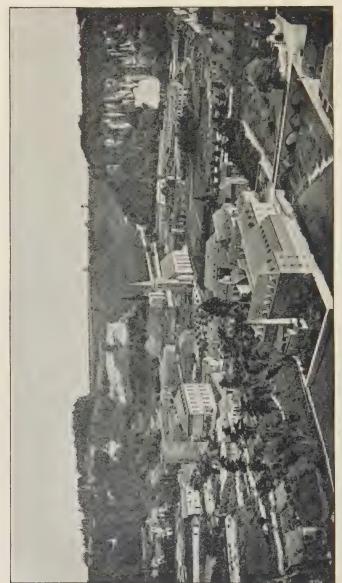
<sup>&</sup>lt;sup>2</sup> Pop. (1921), 27,000.

# CHAPTER IX

#### LUXEMBURG

This is a small independent state, just under 1000 square miles in extent, somewhat smaller in area accordingly than the English county of Durham, lying to the southeast of Belgium, its northern portion forming a wedge of the Ardennes, separated from the Eifel and the province of Rhenish Prussia by the valleys of the Our and Sauer (French Sure), its southern portion belonging to the skirts of the plateau of Lorraine. The Ardennes wedge, known as the Ösling or Eisling, forms the higher part of the territory, a tract at the height of 1300 to 1600 feet, deeply furrowed by narrow winding river-valleys, but even the south, which generally approaches or exceeds 1000 feet in altitude, with valleys at the height of 450 to 650 feet, has somewhat of the same character, and presents a variety of picturesque scenery. One line of valleys traverses almost the whole state in its middle line from north to south, but the valleys slope in opposite directions, meeting in that of the Sauer, which crosses the state from west to east, and then, turning south-east and finally south, carries the bulk of its drainage into the Moselle, which, along with these latter portions of the Sauer and the lower course of its tributary the Our, forms the eastern frontier of the state. The northern portion of the state is in every respect the least productive. southern portion, the Gutland ("good land"), contains

<sup>&</sup>lt;sup>1</sup> Pop. (1916), 264,000.



LUXEMBURG.

fertile soils mainly belonging to the Keuper and the Muschelkalk, members of the Triassic system, which is so largely developed in Central Europe, and the agricultural wealth due to this circumstance is enhanced by the fact that the extreme south-west of the grand-duchy, chiefly round Esch, forms part of the great minette ironfield of the Lorraine plateau, and yields annually large quantities of ore, a considerable proportion of which is smelted within the grand-duchy.

The capital, a town of the same name, containing about 20,000 inhabitants, situated on the Alzette, first mentioned as Lucilinburch, is still sometimes known as Lützelburg. The first part of the name is cognate with the English "little," and hence the meaning is Little Castle. The holder of this castle in 1120 took the title of Count of Luxemburg, and the county was raised to the rank of a duchy in 1354 under the Emperor Charles IV., a member of this family. The duchy, however, was then more extensive, embracing also what is now the Belgian province of Luxembourg, which was ceded to Belgium in 1839. The ceded portion was and is mainly French in language, but the remainder is pure German, and formed part of the German Confederation till the dissolution of that union in 1866. In 1867 it was declared neutral territory under the guarantee of the great powers, and the fortress of Luxemburg was later demolished. Luxemburg, however, remained a portion of the German Customs Union (Zollverein), a fact which added greatly to the value of its deposits of iron-ore. From 1815 to 1890 the King of Holland was also grand-duke of Luxemburg, but since that date there has been a separate dynasty. Since the Great War the people have decided, by plebiscite, on economic union with France.

#### CHAPTER X

#### NETHERLANDS

### 1. General Character of the Country

THE kingdom of the Netherlands 1 consists of the low grounds to the north of Belgium and west of Germany (Prussia). Much of its surface is made up of the deltaic deposits of the Rhine, Maas, and Scheldt, and a considerable portion of this tract, and some others elsewhere, are below the level of the sea. Its present form is the result of a struggle still going on between the hands of man and the forces of nature—a struggle that leaves the victory sometimes on the one side and sometimes on the other, although since the fifteenth century man has for the most part been victorious. In Roman times, however, the area of land in this territory was perhaps larger than it is now. Then at least the large indentation on the north, known as the Zuider Zee or South Sea. so called in contradistinction to the North Sea outside of the string of islands which form the extreme north of the country, did not exist. It was represented only by

<sup>&</sup>lt;sup>1</sup> Area 12,582 sq. miles; pop. (Dec. 31, 1879), 4,013,000; (1889), 4,549,000, showing a mean rate of increase of 1.26 per cent per annum; (1899), 5,104,000, showing an average density of 403 per sq. mile; (1921), 6,865,000.

a comparatively small inland lake, known as Flevo, a name replaced in the Middle Ages by that of Almaro. Inroads of the sea were, however, made at various dates. In 1170, 1237, 1250, and 1287 the sea broke through the channels or gats (gates) on the north, and finally, towards the end of the fourteenth century (1395), the sea broke the barrier between Enkhuizen and Stavoren, and reaching the ancient Flevo enlarged its borders to about its present limits. The sea thus formed is of little depth-at most 50 feet, and of the channels that connect it with the North Sea the Marsdiep,  $2\frac{1}{2}$  miles wide, between the mainland and the island of Texel, and the Vliestrom, 6 miles wide, between Vlieland and Terschelling, are the only two deep enough (both about 65 feet) to have sensible tides and to be capable of navigation by large vessels. The others are nearly blocked by sand or mud-banks, and the islands have on their inner side large mud-banks (wadden), exposed at low tide, connecting them with the mainland.

The Lauwerszee or Groningerdiep, between the provinces of Groningen and Friesland, was formed at an even earlier date. The first inroad seems to have taken place about the ninth century, but it was subsequently enlarged on several occasions. A larger inundation from the Ems in 1277 formed the Dollart, and in 1421 the Biesbosch, which is now composed of a large number of islands, to a large extent covered with coarse grass, between the arms of the Maas, was the result of a great inundation, known as St. Elizabeth's flood from its happening on that saint's day (18th November). Both these last catastrophes are partly ascribed to the neglect of artificial embankments in times of internal strife and disorder. By the latter an

<sup>1 &</sup>quot;Thicket of bent."

area of 180 square miles was submerged, 72 villages destroyed, and about 100,000 people drowned.

#### 2. Rivers

From the account just given it is apparent that it is not merely the sea that the Dutch have to defend themselves against. As in other deltaic tracts, the rivers in their unregulated condition have shifted their course repeatedly. It would be incorrect to say that they have wandered at will over the surface, though that is the first idea suggested. The truth rather is that they have been driven from side to side through the result of their own action. Their own deposits, whether during their normal flow or during flood, have gradually raised their beds and their banks until it was easier in some gush of high water to plunge from some weak point of the bank over a new course than to continue in the established bed. And this must happen endlessly till man interferes. But from a very early date in the Netherlands man has interfered. The great rivers are all regulated; but though they accept control, they demand respect. Some latitude must be allowed them. Only on that condition will they keep their appointed courses. In summer they require no restraint, but wide beds must be left them for their winter floods, as shown on the accompanying diagram.

Every year the rivers of the Netherlands are estimated to carry down, on the average, about 530 millions of cubic feet, equal to an area of more than 1200 acres, or nearly 2 square miles, 1 foot in thickness, and of this quantity the Rhine naturally contributes from its basin, nearly equal to the area of Great Britain, and nearly seven times as large as that of the Maas, by far the



London : Edward Stanford, Ltd., 12, 13, & 14, Long Acre, W.C.



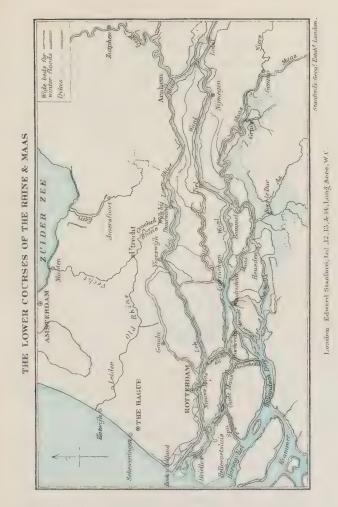
largest share. The quantity of water which it introduces into the Netherlands at Lobit is equal, on the average, to about 83,000 cubic feet per second. This river, accordingly, is most subject to change, and most in need of control, and above all in its lower course, where it mingles its waters with those of the Maas.

Evidence of changes in its course, due partly to natural causes, partly to the interference of man, is found in old names. The Neder Rijn, or Lower Rhine, is no longer the Lower Rhine in any true sense of the term. At Pannerden, just below the point where it enters wholly within Netherlandish territory, fully seventenths of its water flows on under the name of the Waal, and the smaller share is carried onwards under the name of the Neder Rijn by an artificial cutting dug in 1701-07. A dead arm communicating with this branch of the Rhine is known as the Oude Rijn or Old Rhine. A few miles below the Neder Rijn gives off one-third of its water to a branch flowing northwards under the name of the Ijssel by Zutphen to the Zuider Zee, leaving less than one-fifth of the original Rhine to continue its westerly course past Arnhem as the Neder Rijn. Some 30 miles farther on another change in name takes place. At Wijk bij Duurstede a small fraction of its water winds north-westwards to Utrecht as the Kromme Rijn or Crooked Rhine, while the great bulk of the stream flows onwards as the Lek, and a few miles above Rotterdam rejoins the main body of the river, no longer, however, called the Waal, as at Pannerden, but the Nieuwe Maas. From Utrecht to Leiden and the sea at Katwijk a channel of water bears again the name of Oude Rijn, but there is only this name left to show that at one time the river actually entered the sea at this point. The channel now so called is no longer a stream,

but is broken up by dams into a number of stagnant sections. The damming of the Kromme Rijn at Wijk bij Duurstede took place even before the twelfth century, to prevent the silting up of the river mouth at Katwijk.

Equally misleading, if we look to present conditions, but equally interesting, if we consider historical changes, are the names of the Lower Maas and the arms communicating with it. If we wished to pay respect to facts as they are now, we should say that the Maas joins the Rhine (Waal) at Woudrichem above Gorinchem, and that thereafter the Rhine again divides into several branches. But history and custom have established that at this point the name of the united stream is changed to the Merwede, apparently after a village overwhelmed and swept out of existence by the great St. Elizabeth flood of 1421. The first branch of this stream goes off on the left as the Nieuwe (New) Merwede, and enters the Hollandsch Diep. The main stream pursues its course westwards to Dordrecht, and there again divides, the arm that continues the general direction of the river bearing, to one's surprise, once more the name of Maas (Oude Maas), while the other branch going northwards as the Noordsche Kil (North Channel) receives at its northern end the Lek (as we have seen, the right arm of the Rhine), and then flows onwards past Rotterdam as the Nieuwe Maas, the present mouth of which, the Nieuwe Waterweg or New Waterway, a little to the north of the old mouth, is artificial.

This intermingling of the waters of the Rhine and Maas causes special difficulties in their management. First, an overflow bed has to be left for the Maas in time of flood. This is done by means of an overflow outlet (overlat) on the left bank of the river to the south of Nijmegen, whereby a large tract of North Brabant is



## SECTION OF ONE OF THE GREAT DUTCH RIVERS



- A. Summer bed
- B. Inner banks, usually overgrown with reeds
- C. Summer dykes
- D. Outer banks
- E. Great dylves limiting flood bed of river



flooded in spring. This flood-water rejoins the Maas at a point on the south side of the Bommelerwaard—that is, the large peninsular tract between Waal and Maas above their confluence and below the point (at Fort St. Andries) where they approach within a mile of each other. But, secondly, an escape has to be allowed for the waters of the Waal when, as they sometimes do, they stand at a higher level than those of the Maas. To equalise the level an overflow is provided from the Rhine to the Maas above the Bommelerwaard. But that is only a partial remedy. The current at the mouth of the Maas still flows upwards in some cases in consequence of the water of the Waal at the confluence being at a higher level, and therefore another overflow outlet on the south side of the Bommelerwaard above Heusden allows the surplus waters of the Maas to enter the Hollandsch Diep by the channel of the Oude Maasje (Old Little Maas).

Besides the mouths of the Rhine and Meuse this kingdom has also that of the Scheldt. Originally the sole navigable mouth of this river was that which passed northwards between the island of South Beveland and the mainland, and then seawards by the channel known as the East Scheldt. In the Middle Ages this mouth was known simply as the Scheldt, and down to the early part of the fifteenth century the connection between it and the long inlet to the south of South Beveland and Walcheren islands, now known as the West Scheldt, but then only as the Hont, Hontee ("river Hont"), or Heidenzee, was so shallow as not to be navigable. about the date mentioned changes were wrought in the channels by floods, which made the outlet by the Hont navigable by the largest vessels then in use, and further inundations (1530, 1574-83), which greatly widened the old channel in the east of South Beveland, told still

further in favour of the southern route. At last in 1867 the northern route was completely closed by a railway embankment joining South Beveland to the mainland, so that this latter channel, the West Scheldt, now forms the only approach to the harbour of Antwerp.

The Rhine delta has been so modified by the works of man that there is some difficulty in grasping the essentially fluviatile character of the whole of the West Netherlands from Friesland to Zeebrügge. From this point of view no other delta provides so striking an instance of the precarious hold which man maintains by means of ceaseless effort upon a stretch of land where great rivers are in conflict with the currents of the sea.

The height to which the great rivers of the Netherlands are raised above the general surface of the country causes an extensive percolation of water through pervious beds to the adjoining land. Even where the overlying beds are an impervious clay there are generally permeable beds beneath through which the river water may pass, and in many places this water comes to the surface again in the form of springs, which are often a hindrance to cultivation.

### 3. Structure of Surface

In the surface of the Netherlands all the great geological eras are represented, but by far the greater part of the area, all except some small fraction chiefly in the southern outlying part of the province of Limburg, belongs to the Quaternary group. The members of this group are partly composed of diluvium, partly of alluvium. The diluvium is made up of the older sediments, partly dating from the time of the Ice Age. It consists of

deposits of pebbles, sand, loam, and clay, corresponding for the most part to the geest of Belgium and north-west Germany, and occupying the east and south-east of the kingdom. It comprises most of the higher ground of the country, though only at an elevation of from 30 to 400 feet (at St. Pietersberg near Maastricht) above the zero of the Amsterdam Pegel (water-gauge). Altogether it covers about 41 per cent of the whole surface. It is divided into three sections—Scandinavian diluvium in the north, Mixed diluvium in the middle, and Rhine and Maas diluvium in the south. The Scandinavian diluvium extends from the parallel of the town of Groningen in the north southwards to the Vecht, and lies mainly to the east of the meridian of 6° E., so that it embraces almost the whole of the province of Drente, with adjoining parts of the provinces of Groningen, Friesland, and Overijssel. Its centre is the small plateau of Ellertsveld in the middle of the province of Drente, with the Drente Hills (Drentsche Heuvels) in the south-east and the Hondsrug (Dog's back) in the north. On the margin of this plateau are the Hunebedden or graves of the earliest inhabitants of the country. The surface of the Scandinavian diluvium is partly composed of erratic blocks and pebble-beds, remains of ancient moraines of Scandinavian granite and gneiss, and partly of sand and loam derived from the decomposition of those rocks.

The Mixed Diluvium is partly of Scandinavian origin and partly made up of deposits brought from the east and south. It occupies the greater part of the area south of the Vecht and the Zuider Zee, and north of the Prussian frontier and the Maas valley, extending westwards to the neighbourhood of Utrecht and Muiden, thus embracing nearly the whole of Gelderland with the greater part of Overijssel and the eastern portion of the

province of Utrecht. The whole is divided into two sections by the meridional valley of the Gelderland Ijssel, the eastern section comprising the Achterhoek (that is, the hind-loop) of Gelderland and districts known as the *Twente* <sup>1</sup> and the *Salland* <sup>2</sup> in Overijssel, and the western the *Veluwe* <sup>3</sup> in the same province, the *Gooiland*, a narrow strip noted for its fine views near the southern margin of the Zuider Zee and the Utrecht diluvium. The surface is composed partly of hills and pebble-ridges, in places well-wooded, as between Almelo and Hengelo in Overijssel and in Utrecht. The Veluwe is largely composed of sand, which is here and there ridged up into hills.

The Rhine and Maas diluvium is spread over almost the whole of the provinces of North Brabant and Limburg, the principal exceptions being the narrow meridional portion of the valley of the Maas, and a broader margin on the north bordering the Maas and Scheldt. It embraces extensive sand areas, and the southern portion of North Brabant, the Kempen or Campine, exactly resembles the Campine of Belgium, and thus includes considerable stretches of heath and blown sand. The surface deposits of the Rhine and Maas diluvium are mainly derived from the clay-slate plateau of south-eastern Belgium and western Prussia. In the southern expansion of Limburg the older diluvial beds are covered by a loess-like deposit, such as is found in many parts of Europe as well as in other parts of the world (above all in Northern China), a deposit of remarkable fertility, well adapted for the cultivation of cereals, and the source of the wellbeing and dense population of this part of the kingdom.

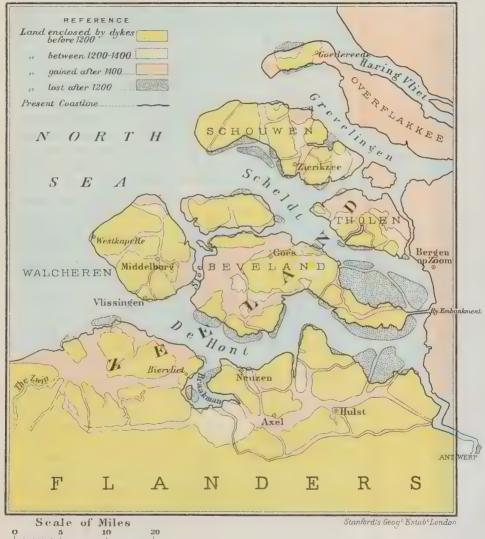
The alluvium of the Netherlands covers about 59

<sup>&</sup>lt;sup>1</sup>=Tweede, "second." <sup>2</sup> "Land on the Sala" or Ijssel.

<sup>8</sup>=Vale ouwe, "unfruitful land."

### ZEELAND IN PAST CENTURIES.

After Beekman





per cent of the surface, and is mainly at an elevation of less than 30 feet above the zero of the Amsterdam Pegel, a considerable area even below that level. According to the character of the surface deposits, it is divided into sea-clay, river-clay, brook-sediments, and blown sand, including sand-dunes.

The sea-clay is composed of deposits originally brought down by the great rivers that have their mouths in the Netherlands, but first laid down in the sea, and afterwards converted into dry land partly by artificial means. It lies chiefly near the outer margin of the land, but within the strip of sand-dunes and blown sand which forms the outer coast-line from the frontier of Belgium to the last of the Frisian islands, though broken by the wide river mouths and the channels between the islands. It has a considerable extent in Groningen, Friesland (the north and west), and North Holland, but spreads farthest inland in the south-west of the country, where it occupies nearly the whole of the province of Zeeland, together with the insular and estuarine parts of North Brabant and South Holland, and forms some of the best soil in the Netherlands.

The river-clay has been deposited by the great rivers along their banks, and is distinguished from the sea-clay, in which only marine shells are found, by the presence of remains of fresh-water snails. Formerly these deposits were annually spread over a wide area on both banks of the rivers, and they now occupy in the region traversed by the Rhine, Lek, Waal, and Maas a tract 70 miles in length (Rotterdam to the east frontier), and with a width varying from about 7 miles (between Arnhem and Nijmegen) to 25 miles (Utrecht to Heusden). Now that the great rivers are all embanked,

the annual inundations and deposits of new silt are confined to the strips between the summer bed of the rivers and the embankments, the strips known as the *uiterwaarden*. Like the sea-clay, the riverclay is extremely fruitful, producing, besides cereals, hops, rape-seed, flax, hemp, tobacco, sugar-beet, and all kinds of vegetables and fruit suitable to the climate. In these last products the *Betuwe*, or tract between the Rhine and Waal, is peculiarly rich.

The brook-sediments (beekbezinkingen or groengronden) are the deposits on the banks of the smaller rivers, chiefly in the diluvial area of the kingdom. They are of similar origin and composition to the sea- and river-clays, but are collected from smaller areas, and are less fertile. Usually they contain much iron-ore, which seems to have been worked at a very early date, signs of which are still to be seen in ancient heaps of slag, especially on the Veluwe in Western Gelderland, between Apeldoorn and Hattem. The ore, which yields an iron suitable only for cheap cast-iron wares, was till recently not only smelted for this purpose to a considerable extent in the Netherlands, but was also exported to Germany and Belgium. Its working seems now, however, to have ceased.

## 4. The Fens

The fens of the Netherlands are divided into low fens and high fens. The low fens have been formed in morasses and stagnant waters by the rotting of freshwater plants under the water and out of reach of the rays of the sun. A spongy mass is gradually formed, and as it is lighter than water, it is bound in course of time to get detached and float on the surface. Such a

<sup>1 =</sup> bet ouwe, "good land."

floating mass is known as til or drift-til (drijftil), and is liable to be blown about by the wind, or, in violent storms, such as in the past have from time to time caused breaches in the dykes, to be carried entirely away. Thus the waters of the Dollart, the Lauwerszee, the Zuider Zee, and the Biesbosch now occupy extensive tracts once covered with fens and til. The low fens generally rest on clay or sand. If the basis is clay,



TYPICAL POLDER SCENERY, ZAANDAM.

then the cost of clearing away the floating turf and draining the stagnant water by steam-engines or wind-mills may be repaid by the value of the land thus reclaimed, but if the basis is sand the loss entailed by such operations is apt to be considerable. Reclaimed low fens are known in the Netherlands as droogmakerijen. The land thus utilised is specially adapted for meadows and pastures, and it is chiefly to these operations that the province of North Holland owes its enormous cattle-rearing industry. In South Holland the drained low

fens are more largely used for tillage. In Friesland, where the low fens rest mainly on sand, such drainage operations have been rare. In Groningen the low fens rest largely on clay, which in many places has been dug up and mixed with the surface deposits, so as to form a good soil for agriculture.

The high fens, where not reclaimed, are mostly occupied by heaths, in places intermingled with shrubs, but were formerly to a large extent covered with trees forests of oaks, beeches, and conifers. The fall of those trees, when age had rendered them unable to withstand the strong south-westerly winds, has gradually covered the ground with rotting trunks, arresting the natural flow of the water, so that in process of time the soil has become too sodden for an arboreal vegetation, and fit only for the low plants and shrubs which now cover it. The largest high fens are the Boertanger Morass in Groningen, extending into the Prussian province of Hanover, where it is known as the Bourtanger Moor, the Ostermoer (East Morass), and Zuidenveld fen in Drente, the Almelo fen in Overijssel, and the Peel in Limburg and North Brabant.

The usual mode of reclaiming high fens consists in first burning off the top layer, whereby a covering of ashes is spread over that which lies underneath. Thus a soil is obtained fit for the growth of fen buckwheat, and is gradually rendered capable of producing crops of greater value. But for this the procedure has to be more thorough, and the reclamation is carried on by means of fen-colonies, as they are called. For the numerous labourers who are required for the work of reclamation, dwellings are erected and surrounded by small enclosures, which are made fit for cultivation, and then diligently cultivated. First, a canal is cut through



London: Edward Stanford, Ltd., 12, 13, & 14, Long Acre, W.C.



the land to be reclaimed. The peat which forms the upper part of the high fens is cut and carried away on this canal. As the cutting proceeds, side canals are formed, and the settlements extend along the main canal and its branches, which form almost the sole means of communication. Roads are difficult to make in such tracts, and such as are made are not fit for wheeled vehicles. Shops of various kinds soon spring up in the midst of the settlements formed for those who clear and cultivate the ground, and lime-burning, brick-making, and glass-blowing are largely carried on to utilise the peat fuel. Starch and treacle works also arise, in consequence of the fact that the potatoes grown on such clearings are fit for no other use. Thus in various ways the fen colonies come to be among the flourishing places of the country.

The most important of these fen colonies are Old and New (Oude and Nieuwe) Pekela, Hoogezand, Sappemeer, Veendam, Wildervank, and Stadskanaal in Groningen; Nieuw-Amsterdam, Nieuw-Dordrecht, Erica, and Hoogeveen in Drente, and Heerenveen in Friesland. Before 1600 no habitations were to be seen on the sites now occupied by those flourishing settlements. Most of them were formed only in the nineteenth century. Old and New Pekela arose in the beginning, and Wildervank in the middle of the seventeenth century.

#### 5. The Dunes

The sand-dunes and blown sand of the Netherlands occupy in all about 290 square miles or  $1\frac{1}{2}$  per cent of the surface. The dunes, a continuation of those of France and Belgium, vary from about 25 to upwards of 10,000 feet in width, and 50 to rather less than 200 feet in

height. Their narrowest part is near 's Gravenzande, and their widest between Scheveningen and Katwijk, where a succession of sand-dunes lying behind one another attain in all a width of more than 2 miles. At Petten (north-west of Alkmaar) a pass in the dunes was formed by a violent storm, in consequence of which artificial dykes have had to be built here to keep out the sea, the chief being the Hondsbossche, which has a length of more than 3 miles and a height of 18 feet. Formerly a continuous forest is said to have stretched along the inner margin of the dunes throughout their length, and of this ancient forest the well-wooded districts of Alkmaar, Bloemendaal, Haarlem, Wassenaar, 's Gravenhage (the Hague), and Loosduinen appear to be remnants.

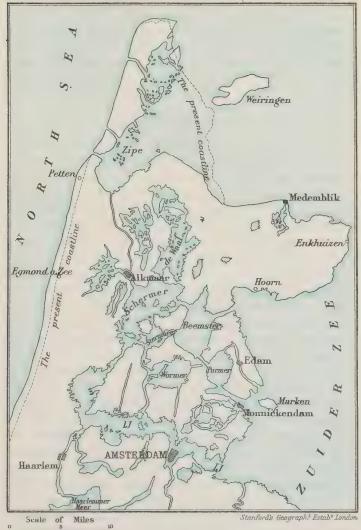
Blown sand still covers a considerable, though gradually diminishing area, especially in Drente, Overijssel, Gelderland, and North Brabant. In the Veluwe alone it occupied not many years ago nearly 40 square miles.

## 6. Older Rocks of the Netherlands.

The rocks older than those of the Quaternary group are confined to southern Limburg, the east of Gelderland and Overijssel, and parts of Zeeland. The coal-measures are represented among the Primary rocks of Limburg, and mines, which are leased by the State to the Aachen-Maastricht railway, are worked at Kerkrade, producing annually about 80,000 tons of coal. Cretaceous limestones extending from Maastricht eastwards to the neighbourhood of Aachen are among the secondary formations of Limburg, and from the hill of St. Pietersberg, in which numerous galleries have been formed by the working of the rock for building-stone.

To the Tertiary period belong some sands and loams

# NORTH HOLLAND IN 1288 (After Beekman)



Loudon: Edward Stanford, ltd., 12, 13, & 14, Long Acre, W.C.



to the north of the Geul (southern Limburg), and some loams in Zeeland (near Aardenburg, etc.), and to the same period belong the older formations of Overijssel and Gelderland (at Winterswijk), these being also mainly loams, characterised in these last localities by a great wealth of fossils.

#### 7. The Polders

The polders of the Netherlands include not merely the reclaimed low fens or droogmakerijen, but also the sea-polders, which have been formed by the gradual accumulation of silt on the outside of the sea-dykes. Sometimes artificial means are taken to hasten this accumulation. Consolidation takes places through the growth first of plants that grow only in salt water, afterwards of others of a less saline character growing on dry ground or ground that is mostly dry, and forming a very good pasture for cattle. The ground is then enclosed and protected against any encroachment of the sea. For the most part sea-polders are naturally drained at low tide, but the fen-polders are necessarily drained entirely by pumping. This drainage is carried out to a greater or less extent according to the purpose to which the polder is devoted. When the land is pasture land it is enough to keep the inner water at a level of about 16 inches below the surface, but if it is arable land it must be drained to a depth of from 30 to 50 inches. In summer, when the evaporation exceeds the rainfall, it may even be necessary to pump the other way, and supply the polders with water from the rivers and canals, which form the receptacles of all surplus water.

Before the embanking of Holland and Zeeland began, the population of those provinces was very scanty, and confined to artificial mounds such as are still met with in Groningen, Friesland, and parts of Zeeland. The construction of dykes began in the early period of the counts, and the title of dyke-counts (dijkgraven) was given to those specially entrusted with the supervision of these structures. William II., Floris V., and Duke Albert are those specially associated with the inauguration of this system of reclamation.

The oldest of the fen-polders are in North Holland, and date from the middle of the sixteenth, the larger ones from the seventeenth century. That of Beemster, for example, was formed in 1612, that of Purmer in 1622, that of Hugowaard in 1625, that of Wormer in 1637, that of Schermer in 1635. The oldest in South Holland is that of Zoetermeer, dating from 1614. The accompanying maps show the extent of reclamation accomplished.

The largest of all the polders in the Netherlands, that by which the *Haarlemmermeer* was reclaimed, dates only from the middle of the nineteenth century. Originally this area was partly under water, partly dry land. In the thirteenth century there were three separate lakes in it, with a united area of 22,500 acres, but in the nineteenth century these had coalesced into one of more than double the size. As early as 1643 a project for reclamation was brought forward by Jan Adriaanszoon Leeghwater, and others were formed by Cruquins and Lijnden in the two following centuries. But not till 1839 was the work seriously taken in hand. The entire area was surrounded by a dyke 33 miles in circumference, and was subdivided by smaller dykes. On the outer dyke were planted three powerful steam-engines for drainage, these being named in honour of the three original projectors just mentioned, and in July 1852 the

drainage was completed, an area of 47,100 acres, equal to about one-tenth of that of the county of Buckingham being thus reclaimed.

An area of about the same extent or perhaps even larger has been empoldered and reclaimed on the Dollart, which in the beginning of the sixteenth century extended in two gulfs far to the south and south-west of its present limits, the towns or villages of Noordbroek, Zuidbroek, Mitwolde, and Winschoten then lying on its margin, but of this reclaimed area only about four-fifths belongs to the Netherlands, the remainder to Prussia (Hanover).

But the greatest of all the schemes of this nature are those for the reclamation of a larger or smaller portion of the Zuider Zee. Several such schemes have been proposed since the middle of the nineteenth century, and in 1894 a royal commission appointed to inquire into these schemes reported in favour of the immediate commencement of one for the draining of about 450,000 acres, by far the greater part of which would consist of fertile land, in the south of this sea. More recently a proposal to dike the sea north-east from the island of Wieringen and drain the area behind the dike has been promulgated. Although Amsterdam has sea connections by its canals it is proposed to leave navigable channels.

## 8. People-National Traits

The whole of the Netherlands, taking them in their widest geographical sense, so as to include all the region to the north and west of Middle Belgium, are no less ethnically than physically divided into two great sections. The inhabitants of the south fell early under the influence and the sway of the southern and alien powers, while

those of the north were from the first a freedom-loving isolated race, devoted mainly to fishing and a seafaring life. Hence it naturally followed that their influence prevailed in the Zeeland or Scheldt group of islands. The Zeelanders, or Zeews, as the Hollanders call them, are kinsmen of the Dutch proper, and being like them an island people, took part with them in all their political movements, although the Scheldt archipelago, as physically belonging to the region of the Scheldt, might be, and in fact has been, claimed by the Flemings.

The north is in all respects the more rugged and younger brother of the south, and the national speech and usages, character and customs, gradually assumed distinctive features independent of each other, and ever departing more and more from the common original type. In this way was brought about the great divorce of the Belgo-Batavian family, branching off on the one hand into the Dutch or northern, on the other into the Flemish or southern nationality.

Besides the Flemings, who form 13 per cent of the people in the kingdom of Holland, and reside in the provinces of North Brabant and Limburg, there live a small number of Low Germans, 2 per cent altogether, in Dutch Limburg. But the great majority of the inhabitants of the Netherlands are the Dutch; 1 or,

In order the better to understand what follows, it will be well to remember that the English term "Dutch" is entirely a misnomer as ordinarily used. Etymologically, it is simply the German word "Deutsch"; that is, "Teutsch"; that is, "Teuton"; and is therefore the most generic name for the whole Teutonic or Germanic family, thus properly including not only the High and Low Germans and the Scandinavians, but the English people themselves, so far as they are ethnically descended nom the Angles and Saxons of Low Germany. But, according to English usage, Dutch has now come to mean nothing more than a very small section of Low Germans dwelling in the Rhine delta. It remains to be stated, that the Germans themselves never extend the word Deutsch to

perhaps better, the Netherlanders, properly so called, descendants of the old Teutonic Batavians. Chiefly settled in the provinces of North and South Holland, Zeeland, Utrecht, and Gelderland, they form 71 per cent of the entire population; the remaining 14 per cent consisting of the Frisians, also a Low German race, who now occupy Friesland, Groningen, Drente, and Overijssel; but who formerly,—that is, before the irruption of the Zuider Zee—were unquestionably spread over the present province of North Holland also. The resemblance in many respects, even in the dress, between the North Hollanders and the Frisians, may still be casily detected by the observant traveller.

Ethnically speaking, both Hollanders and Flemings form a race presenting in its peculiar customs and social features a profound contrast to its German neighbours. Until quite recently efforts continued to be made absolutely to ignore the distinctive nationality of the Netherlanders, and to regard them as differing only in their peculiar dialect from the rest of the Germans. But the utter fallacy of this view becomes apparent when we begin to form some clear conception of the affinities of the Teutonic races. From the now lost prehistoric Teuton speech there sprang the three branches, usually known as the Gothic, Scandinavian, and Germanic, with the last of which alone we are here concerned. This Germanic stock again branched off into the Old High German and the Old Low German, the first giving birth to three dialects—the Frankish, Bavarian, and Alemannic; the last-named being identical with the Middle High German, which, later on, merged in the

the Netherlanders, now restricting its use to all the High Germans and to all the Low Germans excepting the Netherlanders, Flemings, and English.

present current New High German, the ordinary German of literature.

The long extinct Old Low German gave rise to two distinct and well-known offshoots, the Old or Continental Saxon and the Frisian, which last still survives in various dialectic forms in West and North Friesland, on Heligoland and Wangeroog, and in Saterland. From the Old Saxon again there sprang the Anglo-Saxon, the Old Netherlandish, and the Old Platt Deutsch or Lowland German, of which the last two have left scarcely any, if any, written records behind them. But all three became in course of time subject to certain modifying influences; so that out of the Anglo-Saxon arose the modern English, out of the Old Netherlandish the Middle Netherlandish, and out of the Middle Lowland German the modern Platt Deutsch. From the Middle Netherlandish, which is rich in literary monuments, is derived the New Netherlandish, usually called Dutch, with which the Flemish is practically identical,

Thus we see that neither Dutch nor Flemish is a dialect or patois; consequently in no sense are they daughters of the German, but are both as far removed from it as is English, each of them having developed from a collateral stock. Nay, more, the Platt Deutsch or Lowland German itself is also quite as remote from New High German as are the English and Dutch. They cannot even be called sister languages, the relations being at the utmost rather those of cousins-german. And this is quite as applicable to the people themselves as to their speech. The ethnologist, at all events, can have no sort of doubt that the claims of no people to a distinct nationality are more justified than those of the modern Hollanders. In their habits and pursuits they show far greater affinity to the English than to the Germans, and

they are themselves fully conscious of this truth. Hence the Dutchman, as a rule, will have nothing to do with the German, and is fully as ready energetically to repel all encroachments on his marshy meadow-lands as in the days of William the Silent; and it may be added that, for this purpose, his grand system of canalisation would be likely to stand him in as good stead as on former occasions.

Even were he not hardened by his ceaseless struggles with the watery element, from which he has been fain to rescue the very ground inch by inch, the Dutchman would still be the Englishman of the mainland. In the streets we read the same familiar announcements as in the English seaports—outfittings for the East and West Indies, transatlantic steamship companies, commission agencies for the Colonies, booksellers' shops devoted exclusively to works on navigation, colonial affairs, and the like. At a review in the Hague we may see the colonel decorating an officer for distinguished service amongst Daiaks of Borneo, and the strange-sounding names of the Malay Archipelago are in everybody's mouth. In the salons we may even hear the soft sounds of the Javanese language on the lips of young ladies and gentlemen, and there are few members of the upper circles in society that have not been at least once to the Indies. The scions of well-to-do merchant houses go to spend a few years in the East Indies, and, still in their twenty-fourth or twenty-fifth year, return home with matured views and rich experiences of the strange lands visited by them. And even if not belonging to the trading classes, their duties as military men or government officials will often require them to pass some time in the East Indian Archipelago.

Three-fifths of the people belong to the Protestant confession, and the remainder chiefly to the Roman Catholic Church. Of Jews, mainly descendants of Spanish refugees from the persecutions of Philip II., there are some 100,000, of whom 40,000 are in Amsterdam alone, so that this element is very largely represented in the Netherlands.

The intellectual culture of the Dutch stands on a very high level. The greatest attention is paid to public instruction, every village, however small, being provided with an efficient elementary school. Equally well administered are the poor-laws, and public mendicity and vagabondage, being regarded as offences against the State, unknown. There are, in all, six universities, a High School of Commerce, and twelve navigation schools in addition to classical, middle, and elementary schools.

## 9. Commerce and Industry

The advantages that the provinces composing the kingdom of the Netherlands derive from its rich reclaimed soil, its navigable rivers and canals, its extensive coast-line, its fine seaports, and its position with reference to the wealthiest and most populous regions of Europe are obvious, but are hardly sufficient to account for the commanding position, which these territories once enjoyed in respect of industry, commerce, and wealth. To account for the extraordinary rise of this country in the sixteenth and seventeenth centuries historical conditions must be kept in view.

Of the early history of these territories, only a few glimpses can be obtained. A count of Holland, or rather Holland ("woodland"), is mentioned as early as the ninth or tenth century, but the country was then

only a small territory in the neighbourhood of the Merwede and the Maas, and its name probably indicates its general character at that time. Reclamation seems to have begun in the south, advancing from Flanders northwards. In the middle of the twelfth century the inhabitants were already noted for their skill in dealing with marshes. A settlement of Netherlanders was then made by Albert the Bear of Brandenburg on lands deserted by the Slavs, whom he had defeated. The lands they selected were the low and marshy tracts on the Elbe extending to the forests of Bohemia, and this region they in a short time rendered incredibly rich and flourishing. But these settlers were Flemings and Zeelanders. In the middle of the next century, however (the thirteenth), we meet with a sign of progress in the north of the present Holland. A canal at Spaarndam was then begun, and it was appointed that the expenses should be paid by a toll on the ships passing through. The herring fishery no doubt occupied the attention of the inhabitants from a very early date, and early in the fifteenth century (1414) it received a great stimulus from the discovery of the method of drying and barrelling herrings by Jacob Beukelszoon of Beervliet. Two years later the first large herring seine was manufactured at Hoorn. Little more than a hundred years later the merchant shipping of Holland had become so great that when in 1532 the Baltic trade of that province was stopped by Christian of Denmark, four hundred merchantmen that usually navigated that sea lay idle, and ten thousand seamen were thrown out of employment.

But the chief cause of the rapid rise of the Netherlands to wealth and political power was a seeming misfortune. The bigotry and tyranny of Philip II. of

Spain, to whom these provinces, with those now forming the kingdom of Belgium, were subject, drove the northern provinces into revolt (1579), and the favourable conjuncture of circumstances enabled them to defy successfully the power and wealth of Spain, and greatly to develop their commerce and industry as they did so. The obedient provinces in the south suffered, and the advantages which, as is shown in the previous chapter, they enjoyed from the Rhine navigation, passed to the rising ports of Amsterdam, Rotterdam, Dordrecht, and others in the north. Amsterdam was especially favoured by the isolation and security of its position. Merchants and artisans from the Spanish Netherlands were attracted in large numbers by the freedom which could be enjoyed in the new states. Political conditions prevented France and Germany from becoming serious rivals in arts and commerce, and England was still struggling to emerge from the condition of a country producing only raw materials to that of a manufacturing and mercantile people. Hence the industry, commerce, and shipping of the Netherlands grew with unparalleled rapidity. The manufacture of woollens, silks, linens, lace, tapestry, pins, paper, and other commodities was carried to a pitch of perfection exceeding that of any other nation. In spite of laws and decrees the wealth that Spain derived from her possessions in both hemispheres was spent on Netherlandish products, and early in the seventeenth century the Dutch took advantage of the union of Portugal with Spain to direct their enmity against that country also, and to carry the warfare into eastern seas. Very speedily they established a dominion in the East outvying that of the Portuguese, and obtained directly from eastern ports the commodities that they had formerly bought of the Portuguese in Lisbon. The

vast expenses of the war were thus borne with ease, and in the circumstances described the war itself, apart from any conquests, probably accelerated the growth of Dutch wealth. The Dutch were beyond comparison the leading power at sea, and had the bulk of the mercantile shipping, and while the war added to the risks of commerce, these risks would in the long run have to be paid for by the purchasers of the goods, and would thus only add to the profits of the merchants. Within the provinces there was still ample room for internal development and expansion, and some of the most important works of reclamation belong to this period.

The Netherlands still enjoy great geographical advantages, though the relative importance of these

advantages, though the relative importance of these advantages has been greatly altered since the seventeenth century by a variety of circumstances. Political and other conditions no longer prevent or diminish the rivalry of surrounding countries. The intensified national feeling of its eastern neighbour even impairs the value of one of the greatest of its natural advantages, the navigation of the Rhine. Apart from that the relative importance of its advantages in respect of this and other waterways has been reduced by the enormous improvement in the means of communication by land. And lastly, since the application of coal to industrial production, the Netherlands have been greatly handicapped in the competition by its lack of this mineral and its great abundance in neighbouring countries. It still, however, possesses its rich soil, its fine seaports, its natural and artificial waterways, and, of necessity, its admirable situation,—a situation, it must be remembered, all the more valuable in consequence of the increased and increasing prosperity of its neighbours. This one fact is enough to countervail all the circumstances that 2 G VOL. I

have tended to lower the relative position of this country, which accordingly is steadily increasing in wealth and population. Its population has indeed, in recent decades, increased even more rapidly than either England or Belgium, with all their extraordinary industrial development, and the most rapidly growing province, North Holland, shows a greater rate of increase of population than even the most industrial parts of Germany—Westphalia and Saxony.

This high density is chiefly due to agriculture and commerce. Nowhere do the ordinary cereals of the temperate zone—wheat, rye, and oats—yield a higher produce per acre than in these rich provinces, which are also renowned for their horses and cattle. Upwards of 70 per cent of the available surface of the entire country (excluding town and village sites and ground occupied by railways, canals, etc.) is utilised for agriculture in the widest sense, including pasturage, or is occupied by woods and nurseries. Besides the cereals abovementioned large quantities of barley, spelt, and buckwheat, beans, peas, and seeds are grown. There is also a large area under potatoes (larger than that under any cereal except rye), and a greater or less area under artificial pasture-grasses, fodder crops, sugar-beet, flax, hemp, chicory, madder, tobacco, and hops.

a large area under potatoes (larger than that under any cereal except rye), and a greater or less area under artificial pasture-grasses, fodder crops, sugar-beet, flax, hemp, chicory, madder, tobacco, and hops.

Manufacturing industries, moreover, are not wanting. Foremost stand shipbuilding and the manufactures dependent on it. The character of the country naturally gives the making of hydraulic machinery an important place among such industries, and among the others are those connected with the utilisation of native and colonial products—spirit-distilling and brewing, brick and pottery making, sugar-refining, the manufacture of leather, margarine, oil, and soap, of tobacco, cigars and cacao.

The textile industries, in consequence of the deficiency of coal, are of subordinate rank, but are not neglected.

Besides those engaged in trade and commerce, a large number of the daring and hardy seaboard population are occupied with the deep-sea fisheries, while the coasts of the North Sea yield plaice, soles, mussels, and large numbers of oysters, and the Zuider Zee supplies anchovies, shrimps, flounders, and eels, besides herring.

# 10. Chief Towns: The Hague, Amsterdam—the Dead Cities of the Zuider Zee

The seat of government and residence of the king is The Hague, in Dutch 's Gravenhage ("The Count's



THE HAGUE: THE MUSEUM.

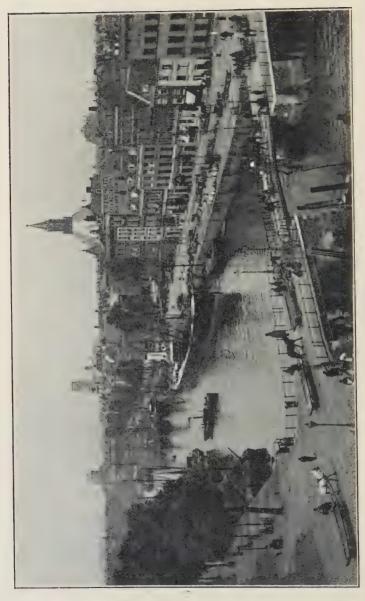
Hedge") or *Den Haag*, one of the handsomest and most elegant cities in Europe. But the true capital of

<sup>1</sup> Pop. (1899), including the neighbouring watering-place of Scheveningen, which belongs to the commune, 205,000; (1921), 355,000.



the Netherlands is, and always has been, at least commercially, *Amsterdam*, the seat of a royal palace and of several royal establishments, and of a communal university, the place in which by law the king must be formally enthroned, the centre of the defensive system of the country, and the chief industrial centre of the kingdom. A lord of the Amstel is first mentioned early in the twelfth century, but it was only in 1300 or 1301 that the small settlement that there grew up was raised to the dignity of a town, which moreover had no importance till the revolt of 1579 gave to its site the peculiar advantages that, as we have already seen, made it the refuge of a numerous and industrious population. Within fifty years after the revolt its numbers had increased to 105,000 (1622), and forty years later its population reached 200,000. In commerce and shipping, as in other respects, it then took the lead among the towns of the Netherlands, but under the changed conditions that peace and security have brought it has long been eclipsed in these respects by the much more favourably situated emporium of Rotterdam. Originally the only access to Amsterdam for sea-going ships was by the shallow Zuider Zee, but this fact, which was an important guarantee for its safety, was a hindrance to its commerce. and hence, in the present century, other means of approach have been provided. In 1824 a canal, with a depth of 21 feet, leading to the fortress of Helder at the north end of the mainland of the province, was opened, but a much more important work for the commerce of Amsterdam was the direct connection of the Ij, the former inlet of the Zuider Zee, on which the city stands, with the North Sea at Ijmuiden, in 1876. By this work, which enables large vessels to reach Amsterdam,

<sup>&</sup>lt;sup>1</sup> Pop. (1899), 524,000; (1921), 647,000.



the tonnage entering the port was promptly raised from about 500,000 to 1,500,000 tons. But a connection with the great natural waterway of the country was still wanting, and this was established in 1892 by the opening of the Merwede Canal, connecting Amsterdam with Vreeswijk and Gorinchem (Gorkum). Amsterdam relies for its trade upon exports from the Dutch Colonies and upon the home trade.



DORDRECHT.

But the great advantage of the natural waterway of the Rhine is shown by the fact that the tonnage that enters the port of Rotterdam¹ (which now includes Delfshaven) with cargo far exceeds that of the port of Amsterdam. Its shipping nearly equals that of Antwerp, and deals with a considerable amount of transit trade, in this respect resembling Hamburg and Antwerp. It has already been indicated

<sup>&</sup>lt;sup>1</sup> Pop. (1899), 320,000; (1921), 516,000.

that in competition with Antwerp there is one physical disadvantage under which Rotterdam suffers—the smaller depth of water. Constant efforts are, however, being made to improve the port by providing every accomodation for the large ships of the present day. The port now has 131 acres of water area with nearly 9 miles of quay on the right bank of the river, and 152 acres of water area with 6 miles of quay on the left



HÔTEL DE VILLE, DELFT.

bank. It must, moreover, be remembered that Rotterdam is only one of the Dutch ports of the Rhine, and if we add the tonnage of Dordrecht, Schiedam, and Maasluis (in the aggregate about one-ninth of that of Rotterdam, if we consider only the tonnage entered with cargoes) the advantages of the Rhine and its connections stand out still more conspicuously. It is a noteworthy feature of Dutch shipping generally, and above all at the principal ports, that the tonnage cleared with cargoes bears but a small proportion to that which enters. The

principal reason is, that while Dutch ports are the centres of distribution for large quantities of produce imported from the Dutch colonies, as well as from foreign countries, both for home and foreign consumption. they are not used to the same extent for the despatch of goods of foreign, or, we may say, more particularly of German origin. The preference given in Germany to German ports appears to prevent that country from



HAARLEM.

using to the full the advantage of the Rhine as an outlet for its goods, while the use of the Dortmund-Ems Canal and of a possibly canalised Moselle in relation to the traffic to and from Westphalia, and, further, the disturbed political situation in the whole of the Rhineland, must inevitably react upon the progress of Rotterdam.

Besides these three cities there are a considerable number of towns, varying in size and importance, all crowded together in a narrow compass. Amongst them are Delft, Haarlem, Schiedam, Dordrecht, the two university towns of Leiden and Utrecht, and some others. Leiden, on the Old Rhine, is frequently described as the oldest town in Holland, being identified with the Roman Lugdunum Batavorum; but this identification is extremely doubtful—in Holland is said to be generally discredited, the similarity of the name being attributed to mere coincidence. The first certain mention of the



LEIDEN.

town is in the eleventh century. Its fame began with its heroic resistance to the siege of the Spaniards from 31st March 1573 to 21st March 1574, to commemorate which its university was founded on the 8th of February 1575. This university, with its admirable collections, still maintains for it a European reputation, and in the seventeenth and eighteenth centuries, when it had among

<sup>&</sup>lt;sup>1</sup> Pop. (1899), 32,000; (1921), 39,000.

<sup>&</sup>lt;sup>2</sup> Pop. (1899), 65,000; (1921), 54,000.

<sup>&</sup>lt;sup>8</sup> Pop. (1899), 38,000; (1921), 77,000.

<sup>&</sup>lt;sup>4</sup> Pop. (1899), 53,000; (1921), 66,000.

its professors Salmasius, Grotius, and Boerhaave, it enjoyed a high renown. *Utrecht*, situated where the Crooked Rhine branches off into the canalised Old Rhine and Vecht (Stichtsche or Hollandsche Vecht), is another town whose name is popularly, but very doubtfully, traced to a Roman origin (*trajectus*, from which has been formed the name applied to it in Latin,



UTRECHT.

Ultrajectus). It is first known as a place surrounding a princely palace in the beginning of the eleventh century, and containing also the seat of a bishop. The chapter-house of its cathedral is celebrated in Dutch history as the place where the union of the revolted provinces was brought about (1579). The town is also noted as the place where the peace that put an end to the War of

<sup>&</sup>lt;sup>1</sup> Pop. (1899), 102,000; (1921), 140,000.

the Spanish Succession was concluded in 1713. The university dates from 1633. In the eastern provinces are Zwolle, Leeuwarden, and Groningen, and in the east of Overijssel, the three small cotton-manufacturing towns of Hengelo, Enschede, and Almelo. Probably nothing but the cheapness of the land and the want of other occupations led to the establishment of the industry in this district, which has no connection by water and is not even connected by rail by any very direct route with the Rhenish coalfield; but here nevertheless it has been carried on with more or less success since the close of the eighteenth century. Round about the Zuider Zee lie a number of places, such as Hindeloopen, Molkwerum, Edam, Hoorn, Enkhuizen, Medemblik, and Stavoren, at one time wealthy and prosperous, but now not inaptly named "the dead cities of the Zuider Zee." Harlingen, the port of Leeuwarden, possessing a harbour with a depth of 14 or 15 feet on the bar at neap, and 15 or 16 feet at spring tides, is the one port on this sea which still maintains a considerable trade under modern conditions, exporting large quantities of butter, cheese, and timber to England.

<sup>&</sup>lt;sup>1</sup> Pop. (1899), 31,000; (1921), 36,000.

<sup>&</sup>lt;sup>2</sup> Pop. (1899), 32,000; (1921), 43,000.

<sup>&</sup>lt;sup>8</sup> Pop. (1899), 67,000; (1921), 91,000.

### CHAPTER XI

#### GERMANY

#### 1. Situation and General Relief of the Land

Germany is composed of a number of states in the middle of Europe, stretching through about 17 degrees of latitude and  $8\frac{1}{2}$  of longitude. On the north it borders on the sea, except at its junction with Denmark; on the south and south-east it is separated for the most part by fairly well-marked physical features from Switzerland and Austria. On the west the frontier is partly formed by a river (the Rhine) and is largely arbitrary, as the eastern frontier is entirely.

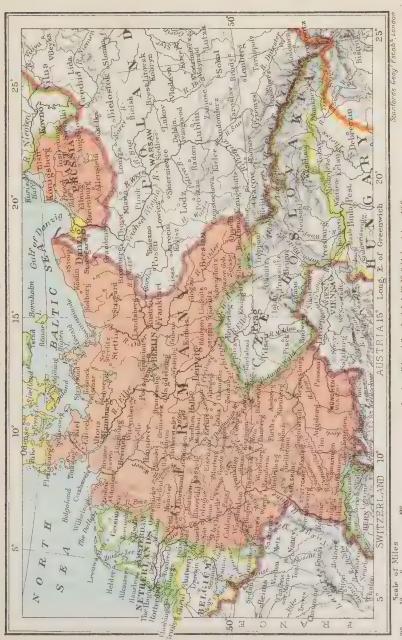
Since the Great War 1 the new German republic is no longer the compact state which was developed as the German Empire subsequent to 1870. Alsace-Lorraine in the south-west has gone back to France, Slesvig in the north has gone to Denmark, and the new State of Poland with the port of Danzig now separates East Prussia from the rest of Germany. Coupled with these territorial reductions Germany has suffered the loss of her Colonies, her navy, and part of her merchant fleet,

<sup>&</sup>lt;sup>1</sup> For an excellent summary of the problems and consequences of the Great War, both to Germany and the rest of the world, see *The New World: Problems in Political Geography*, by Dr. I. Bowman, New York. 1921.

with the consequence that the outlook of Germany is necessarily domestic rather than world-wide; Germany must reorganise at home to attempt anew the commercial conquest of the world.

The surface of the whole region now under consideration may be described in the most general terms as elevated in the south, while in the north and east it presents the aspect of a vast and almost uninterrupted plain. The elevated region is made up of hills, mountains, and tablelands, with intervening valleys of greater or less extent. The range farthest to the north is the Harz, nearly in the middle of the empire, near lat. 52° N., or about the same latitude as that of London. From this range the boundary of the elevated region runs south-westwards to the south of Belgium, and south - eastwards to the frontier between Silesia and Bohemia: north of these lines the land lies lower than 600 feet above sea-level except for the heights southwest of Hanover and the ridge of the Teutoburger Wald. In the west the lowland cuts as the bight of Cologne into the southern uplands, and thus makes connection with the lowland floor of the Middle Rhine and leads the way to the Rhine Gorge.

North-west of the Vosges we still pass through a hilly or mountainous region, through which the Rhine flows in a remarkable gorge extending from Bingen to the Siebengebirge at Königswinter, and gradually expanding from thence to Bonn. The range of hills lying between these two rivers is known as the *Hunsrück*, which begins above Saarburg and advances close up to the Rhine, receiving in succession the local names of *Hochwald*, *Idarwald*, and *Soonwald*. Its highest point is the Erbeskopf, or Walderbeskopf in the Hochwald, which reaches the height of 2675 feet. North of the





Moselle, again, lies the old volcanic area of the *Eifel*, stretching westwards through Belgium to the Meuse, a region in which a tableland of Devonian slates is studded with extinct volcanoes of mid-Tertiary times.

Turning to the right bank of the Rhine, we find the Schwarzwald, or Black Forest, rising over against the Vosges, and presenting such a close correspondence to these in inner structure, as scarcely to leave any doubt that they originally formed one connected mass. The Schwarzwald, from Säckingen to the borders of Pforzheim, skirted west and south by the Rhine, extends north and south for a distance of 87 miles, with a breadth varying from 25 to 44 miles, everywhere almost imperceptibly merging in the Triassic plateau of northern Württemberg, so that here it becomes very difficult to draw a hardand-fast line between the two. It will, however, be best to draw it where the New Red Sandstone is supplanted by the Muschelkalk, for here ends the dark pine forest whence the range takes its name, and is again succeeded by extensive arable lands. The highest summits are in the south, where this highland region culminates in the Feldberg, 4900 feet, and where there are several other elevations exceeding 4000 feet in height. Many of these are famed alike for their glorious prospects and for the great variety of their alpine flora. On the right bank of the Rhine, in the plain between the Vosges and the Black Forest, rises the isolated volcanic mass of the Kaiserstuhl to the height of 1825 feet, as if to guard the recess in which Freiburg lies ensconced.

Still going eastwards, we come to where the Swabian and Franconian Jura traverse Würtemberg and part of Bavaria in a south-west to north-east direction. These ranges are a geological continuation, not of the Swiss Jura immediately to the south, but of the Franco-

Swiss Jurassic ranges a little farther to the south-west. The highest elevations all belong to the Swabian Jura, which consists of a broad tableland 2300 to 2700 feet in height, with the steepest slope to the west. This slope, however, does not form a continuous line. margin of the plateau has here been so irregularly worn away by denuding agents that some portions of it have been wholly detached from the main mass, and others are nearly cut off by deep and steep-sided valleys. Similar valleys cutting right across it break it up into sections, known as the Heuberg Hardt, the Rauhe Alb, the Albuch, and the Härtfeld. The Franconian Jura running east and then north through the middle of northern Bavaria is rather a tract of hilly country than a range of hills or mountains. These highlands form the north-western boundary of the Swabo-Bavarian plateau, which may be regarded as the gradual northerly slope of the Alps, and hence as a continuation of the northern plateau of Switzerland. Its southern boundary in Germany is formed by the Noric Alps, separating Bavaria from the Tirol, and containing many peaks between 4000 and 8000 feet in height, while the culminating peak, the Zugspitze, rises to an elevation of 9710 feet. Its north-eastern boundary is formed by the Böhmerwald, on the frontier of Bohemia, where Mount Arber rises to the height of 4765 feet.

The plateau thus lying between the Alps and the Jura has an average height to the south of the Danube of about 1600 feet, and is furrowed by numerous streams flowing mostly parallel to each other from the Alps to the right bank of the Danube. Such are the Iller, the Leeh with the Wertach, the Isar with the Ammer or Amber, the Inn with the Salza. The valleys, or rather the deep troughs, excavated by these streams, follow close

on one another from west to east, the distance between them amounting to no more than a tenth, and often much less than a tenth, of their whole course. This inclement, and in general far from productive region, is mostly covered with extensive peat-bogs and morasses; and is further characterised by a series of lakes, such as Lakes Ammer, Würm or Starnberg, Simm, and Chiem. These lakes, all of them as monotonous as the landscape itself, are not to be confounded with a second and smaller series lying beyond them on the projecting spurs of the Alps, amongst which the loveliest are Lakes Tegern and Schlier between the Isar and the Inn, and the Königssee, to the south of Berchtesgaden in the south-eastern angle of Bayaria.

Corresponding to the southern or Alpine tributaries of the Danube are the numerous streams flowing from the Jura southwards to its left bank. Such are the Lauter, Blau, and Brenz, from the Swabian Jura, the Wörnitz, and Altmühl, bursting through the Franconian Jura in Bavaria, and the Naab and Regen, traversing the plateau of the Upper Palatinate.

The outward aspect of the German Jura is no more attractive than is that of the Swiss and French. The Swabian Jura, or Swabian Alps, as they are also named, in Württemberg, fully deserve the name of "rugged" (rauhe), by which they are called, consisting of a rocky limestone plateau from 15 to 30 miles broad, full of caverns, but with few streams, with leafy woods and pasturages, and flanked by a number of truncated cones. Its rude climate has earned the name of the Württemberg Siberia for the district of Münsingen on the bare Swabian hills, which are here swept by bitter north winds.

Following these slopes we are again taken westwards to the region lying north of the Black Forest. South VOL. I

and west of the Neckar valley this region is an undulating, cultivated, hilly district about 1650 feet above sealevel, while to the north, between the Neckar and the Main, rises the pleasant *Odenwald*, with the Katzenbuckel (2060 feet), a densely peopled district, with truncated cones and open dales, spreading from the north of Baden over all the south-east of Hesse. It is mainly a mass of gneiss and protogine bordered eastwards by deposits of the Lower Trias, the north-eastern corner of the rift valley of the middle Rhine.

Washed on three sides—east, south, and west—by the Main, between Lohr and Aschaffenburg, rises a flat, manyconed frowning mountain mass of Lower Triassic rocks, forming the Spessart, the older form of which, met with in 839 under the spelling Spehteshart, "the woodpecker (speight) forest" discloses the same Old High German word as we have already met with. Though abrupt and striking from its position and appearance, its elevation is not great, culminating in the Geiersberg "vulture's mount" (2020 feet). It is covered by unbroken forests. so that wherever high and favourably situated spots afford a distant prospect over crests and cones and into the deep-lying valleys, the eye, whichever way it turns. beholds literally nothing but sky and woodland. Renowned for their beeches, which here cover an enormous extent, and still more for their oak-trees, which tower in unparalleled magnificence, these forests always make a deep impression on the visitor, and all the more so, since one may wander about for hours together without anywhere seeing a hamlet or even a single house. In the valleys alone are to be found a few scattered settlements-more numerous and populous, however, than those of the quadrangle of the Haardt above spoken of.

# 2. Middle and Eastern Parts of the Highland Region

The highlands of middle Germany embrace the whole area extending from the right bank of the Rhine, between Bingen and Cologne, eastwards through Westphalia, Hesse, and Thuringia, to Saxony. Here is the greatest northern extension of the ancient block mountains, the pre-Alpine heights of ancient Europe, reaching north to the German portion of the European plain. With the other ranges of middle Germany the Spessart is closely connected, being separated only by the valley of the Kinzig, a tributary of the Main, from the Vogelsgebirge or Vogelsberg in Hesse on the north. This, again, is flanked on the south-west by the Taunus between the Main and Lahn, on the east by the Rhöngebirge, which in their turn are severed only by the lovely valley of the Werra from the Thuringian mountains. It is the Taunus whose western extremity, the Niederwald, forms the right bank of the Rhine at the gorge of Bingen, and now bears at the top of its steeper slopes, above Rüdesheim, the national monument, the chief feature of which is a colossal statue of Germania, erected in 1877-1883 to commemorate the restoration of the German Empire. Here is the Rheingau, famous for its magnificent vintages, and for its abundant mineral springs—Homburg, Wiesbaden, Schlangenbad, Schwalbach, Soden, Selters, in some respects Ems also, besides Geilnau and Fachingen. Its highest point is the Great Feldberg, 2885 feet above the sea.

Parallel with the Lahn flows the Sieg, another affluent of the Rhine, and between them rises the Westerwald, whose north-western end, the so-called Siebengebirge, a number of volcanic cones grouped closely together, rises hard by the Rhine at Königswinter. Of the seven more prominent peaks, the most noteworthy

are the Drachenfels (1065 feet) and the Oelberg (1520 feet). Still farther north, between the Sieg and the Ruhr, lies another hilly district, the Saverland or Süderland.

The Vogelsberg mentioned above as lying immediately to the north of the Spessart forms the southern part of an undulating plateau, which in this quarter culminates in the Taufstein (2535 feet). It is a large mass of basalt, succeeded by numerous other considerable patches of the same rock as far north as Kassel, and by smaller patches still farther north up to the parallel of 51° 35′. Beech, maple, and pine woods, varied with open heaths and marshy meadows, cover these hilly districts, whose bleak climate and long winters have acquired for them the name of the "Hessian Siberia."

The rugged and generally cloud-capped Rhöngebirge, a swampy plateau, 2000 feet high, serves to connect the Vogelsberg with the Thüringerwald, or Thuringian Forest. The latter, beginning east of the Werra, consists of a narrow chain stretching for about 150 miles in a north-westerly direction, and separating the valley of the Elbe from those of the Werra and the Main. It is composed of a core of Permian largely porphyritic rocks running from the north-west of Eisenach to the southeast of Ilmenau, with Lower Triassic deposits on the north-east and south-west. Its highest points are the Schueekopf (3210 feet), Ingelsberg (3150 feet), and the Beerberg (3225 feet), and the aspect of this well-wooded region, though pleasant, can scarcely be called grand.

The south-eastern section of the Thuringian Forest is called the *Frankenwald*, a range of Lower Carboniferous rocks, and attains a considerable breadth, while its northern extremity is narrower and sinks in regular terraces towards the southern foot of the *Harz*, a

name in which the Old High German word for "forest" again appears. From the last terraces of the Thuringian Forest this celebrated range is separated towards the west by the Oder, a small feeder of the Leine, and in the east in a much more marked manner by the rich valley of the Helme, the renowned Goldene Aue or Golden Meadow, on the south side of which rises the Kyffhäuser (1595 feet), long crowned by the ruins of a castle, in which, according to the legend, the stout old emperor Frederick Barbarossa was said to sleep, awaiting the resurrection of the empire in all the strength and glory that it enjoyed under himself. On the north the Harz overlooks the great plain, and thus stands almost isolated. It is partly to this conspicuous position that it owes the celebrity which it enjoys out of proportion to its extent and elevation. It consists of a series of parallel ridges, mainly of Lower Devonian age, with the same general direction as the Thuringian Forest and the Teutoburger Wald, namely, south-east to north-west, with a total length of about 60, and a breadth of about 16 miles. The highest summit is the granitic mass of the Brocken or Blocksberg (3745 feet). The lower slopes are in general richly clad with forests, but the higher parts, which are frequently enveloped in mists, are just as remarkable for their bareness and the wildness of their features. From very early times the mountains have been famous for their mines, and the wild legendary tales of the Harz miners have likewise contributed greatly to give to these mountains their peculiar celebrity.

Passing eastwards from the Thuringian Forest we get into gently undulating, and, for the most part, fertile country, with isolated hills and mountain groups here and there, until we come to the *Fichtelgebirge*, or "fir-

mountains," a curiously isolated mountain range, partly in Saxony, but chiefly in the north-east of Bavaria. It is of somewhat angular horse-shoe shape, opening northeastwards to Bohemia, the ridges composed of granitic and gneissose rocks, and the interior basin of Wunsiedel mainly of azoic schists. It is separated by depressions from the Böhmerwald on the south, the Thüringerwald on the north-west, and the Erzgebirge on the east, and is situated so centrally that it sends its waters to three great rivers, the Rhine, the Elbe, and the Danube, and hence to two widely separated seas. Its culminating summits are the Schneeberg and Ochsenkopf, respectively 3455 and 3360 feet in height. To the north-east of it lies the bleak plateau of Vogtland or Voigtland, mainly in the south-west of Saxony, a region that takes its name from the fact that in the Middle Ages, when it was an immediate possession of the emperors, it was governed by Vogts (Vögte) or imperial prefects. In the corresponding corner of eastern Saxony lies the hilly region of upper Lusatia, which has several summits above 2000 feet in height, though none above 2500; and between these two there stretches on the southern frontier of Saxony the chain of the Erzgebirge; but as these mountains, as well as the Riesengebirge on the Silesian frontier, belong more properly to Bohemia than Germany, we reserve our detailed description of them for the chapter on Austria.

The only other prominent features which remain to be mentioned as belonging to the German highland region are *Glatz* and the *Sudetic* ranges, running parallel to the Riesengebirge in the south-west of Prussian Silesia. Neither of them attains any great elevation, and the highest summit of the latter, the Altvater, is beyond the German frontier.

#### 3. The North German Lowlands

The north German lowlands form part of the great plain that stretches right across Europe from the coasts of Belgium and Holland.

Its general slope, as might be supposed from the direction of the river-courses, is from the south-east towards the north-west. The great rivers watering this region, taking them in their order from west to east, are the Rhine, the Ems, the Weser, the Elbe, and the Oder. The last three as well as the Vistula show a parallelism in their main course no less than in their principal bendings, and the same remarkable correspondence is observed in the flow of their tributaries; these resemblances are traceable to the effects of the Ice Age.

The Teutoburger Wald, a narrow and perfectly straight sandstone ridge, composed of rocks of various age between the Wealden and Upper Cretaceous formations, running north-west and south-east, between the Weser and the Ems in the west of Hanover, is the only considerable elevation in this plain, and the lower elevations of the Lüneburger Heide lie west of the Ilmenau.

The coast of the west German lowlands on the North Sea is very low, and has in fact something of the same nature as that of Holland, of which it is a continuation, and the tendency shown by the rivers Ems, Weser, and Elbe to form wide estuaries in this part is characteristic. The seaboard and the borders of the rivers in this tract consist, in places to a width of about 12 miles, of soil derived from an old seabottom, like the soil of the Dutch polders, and to a large extent is treated in the same way. This land, which is known as the Marsch ("marsh"), comprises among other parts the German as well as Dutch shores of the Dollart,

the shores of Jade bay, the Butjadingen and Oster-stade ("east shore"), respectively west and east of the Weser below Bremen, Land Wursten and Land Hadeln between the mouths of the Weser and Elbe, the Land Kehdingen and Alte Land on the left bank of the Elbe below Hamburg, the islands in the Elbe between Harburg and Hamburg, as well as the Vierlande and Neuland on different banks of the Elbe above Hamburg, the right bank of the Elbe below Schulau (9° 43′ E.), and the Dithmarschen on the west coast of Schleswig-Holstein. Much of this area, especially in the Dithmarschen, has been reclaimed within historical times.

Behind this rich seaboard there lies a large tract of higher and generally less fertile ground known as the *Geest*, much of which consists of nothing but sandy wastes overgrown with heath and heather, whereas the lower and wet lands consist of fertile marshy ground or extensive peat moors. Such moors abound more especially in the region of the Ems.

The total area of these moors, the natural vegetation of which consists almost exclusively of heaths in the drier parts, and of *Sphagnum acutifolium* in the bogs, is estimated at about 2340 square miles, two-thirds of which belong to the Prussian provinces of Hanover and Saxony, and Oldenburg, and the remainder to the adjoining part of the Netherlands (the Bourtang morass). Part of the area has been reclaimed for agriculture, in the manner first practised by the Dutch. Across it the now canalised Ems drains without tributaries from Westphalia to the Dollart See.

A very different aspect is presented by the old Slavonic domain of the now Teutonised eastern low-lands, forming between the Elbe and the Vistula the background of the Baltic Sea. Here the coast is every-

where higher than west of the Elbe, and is protected from the waves either by dunes or by steep shores rising as high as 520 feet above the sea-level. The Baltic, being moreover an inland sea, but slightly affected by the tidal movement, is in any case far less dangerous than the North Sea. In fact, in the east, instead of being encroached upon, we find the seaboard continually advancing. At times, however, this tendency of the seaboard to advance has been more than counterbalanced, not by the violence of the waves, but by the sinking of the land. The island of Rügen is known to have been at one time part of the mainland, and it was only in 1510 that the Frisches Haff, behind the Gulf of Danzig, was formed by an inroad of the sea, due to the same cause. Not improbably the Kurisches Haff at the mouth of the Memel or Niemen was originally formed in the same way; but the peculiar shape of these lagoons, characteristic of the German shores of the Baltic opposite the mouths of rivers, has another explanation. The peculiarity consists in the fact that shallow fresh-water basins are almost entirely cut off from the sea by low and narrow spits of land called Nehrungen, composed mainly of sand-dunes, presenting a smooth outline on the outside and a much more irregular outline on the inside. The smoothness and form of the coast-line are due to the sweep of Baltic currents, such as have also determined the form of the spit known as the Putziger Nehrung on the north-west of the Gulf of Danzig. The irregularities of the inner shore-line are the result of the more irregular movements of the fresh waters within.

The island of Rügen 1 on the coast of Pomerania is

<sup>&</sup>lt;sup>1</sup> See a monograph on the island by R. Credner, part v. of vol. vii. of Forschungen zur deutschen Landes- und Volkskunde (1893).

the gem of the Baltic islands, abounding in bays and inlets, and with the varied succession of its woods and glades, hills and dales, rocks and moors, dunes and pasture lands, presenting a pleasant contrast to the dreary mainland close by. Its elevated portions, connected by low and narrow isthmuses (wholly or mainly under 16 feet in height), are mainly composed of chalk. The highest point, 525 feet, is in the interior of the north-eastern peninsula, that of Jasmund, on the coast of which the Stubbenkammer has a conical peak known as the Königsstuhl (King's Seat) rising to 400 feet in height.

The indentations of Rügen and the neighbouring coast are curiously branch shallow bays or "boddens"; the drowned valleys of Holstein such as the opening on which stands Kiel are "förden." The Baltic Heights which form a broad low swelling parallel with the Baltic Coast are due to morainic debris from the Glacial Epoch; they stretch beyond Germany to the Gulf of Finland.

Marshes and polders are unknown in the east German lowlands, which are, on the other hand, densely studded with bodies of still water. These countless lakes of all sizes are distributed principally over the plains of Holstein, Mecklenburg, Pomerania, and East Prussia, and are most numerous in the two firstmentioned districts. The Masurian Lakes of East Prussia were of considerable strategic importance during the early campaigns of the Great War on the frontier between Germany and Russia.

#### 4. Rivers and Canals

By far the most important of the German rivers are the Rhine and the Elbe. The Rhine, affectionately called by the Germans "Father Rhine," constitutes the boundary between Switzerland and Germany from the Lake of Constance to Basel, and during this part of its course it flows in a rocky bed skirting the Swiss Jura on the left, and separating it from the Franconian Jura (Swabian Alps) and the crystalline masses of the Black Forest. About 2 miles below Schaffhausen (between Laufen and Neuhausen on opposite banks) it forms the celebrated falls, plunging over a rock of Jura limestone about 60 feet high. Lower down a smaller fall occurs at Zurzach, but this can be passed by boats when the river is low, and still lower there are rapids at Laufenburg, where the river-bed is narrowed on reaching the gneiss of the Black Forest, and again at Rheinfelden ("the Höllenhaken") in the Muschelkalk. At Basel the river turns northwards, and as far as Mainz winds over a long flat plain, making numerous loops enclosing many islands. Here, in consequence of floods, a considerable area on both sides was formerly marsh land; but since the regulation of the river between 1818 and 1872 this evil has been greatly remedied. At Bingen, where the river enters the gorge above mentioned (p. 467), the navigation has been improved by the removal of rocks which formerly interrupted the course of the stream. Nothing gives a more vivid idea of the importance of the Rhine traffic than the trains of barges of from 1000 to 2000 tons burden, four or five of which are tugged up-stream by a single powerful steamer from Rotterdam to Mannheim. Above

<sup>1</sup> Length, 810 miles; area of basin, 86,600 sq. miles.

Mannheim the navigation is less important, and above the confluence of the Ill the too rapid river is practically deserted as a waterway in favour of the Rhine and Rhone Canal. The Neckar and Main, on the right bank of the Rhine, traverse scenes not unlike those traversed by the main stream below Bingen, winding amongst bolder or softer vine-clad hills often crowned by ruined castles. The former is navigable for barges below Kannstadt (a distance of 117 miles), and the latter from the angle below Bamberg (a distance of nearly 250 miles). The Moselle (or Mosel, as it is called by the Germans), on the left bank, becomes navigable at Pont-à-Mousson in the French department of Meurthe, but is really of little use for navigation on account of its extremely tortuous course and low water during droughty summers.

By means of canals the basin of the Rhine is connected with the basins of the Rhone and Saône, Scheldt, Meuse, and Danube. The Ludwig's Canal, which effects the last-mentioned communication, must now be said to be of more historical interest than commercial importance. From very early times it has been an object of desire to connect these two great basins by water. The remains of works begun with this aim, and attributed to Charlemagne, can still be seen, but it was only in the last century that the canal was actually made. This canal follows the main valley of the Regnitz, the tributary of the Main that joins its principal 4 miles below Bamberg at the angle above referred to, crosses the water-parting at Neumarkt at the height of 1443 feet above sea-level, and debouches into the Altmühl, a tributary of the Danube. But now that it has been made, it has been to a large extent superseded by railways; it is an unusual sight for the traveller in the valleys to see the evidences of the infrequent barges passing high up along the valley





slopes. The Danube itself, which has its origin in two mountain streams rising in the Black Forest at the height of 2850 feet above sea-level, becomes navigable at Ulm for vessels of 100 tons, and at Regensburg (Ratisbon) for steamers.

The *Elbe*, which rises in Bohemia, is already navigable when it crosses the German frontier, but its importance as a waterway, and its canal connections, will be more conveniently considered with reference to its great port, Hamburg. The scenery on its banks is nowhere very interesting, except in the part above Dresden, where it and its numerous tributaries cut through the so-called "Saxon Switzerland," in which the sandstone rocks have been weathered into highly remarkable and often fantastic, but very characteristic, forms.

Between the basins of the Rhine and Elbe lies the basin of the Weser.<sup>3</sup> This river is now regarded as formed by the confluence of the Werra and Fulda at Münden (that is, "the mouths"), about 10 miles north-east of Kassel, but the names show that the former stream was originally regarded as the true headwater, for both names Weser and Werra are of the same origin. Werra is a corruption of the Old High German Wisuraha, that is, Water of Wisur, the Visurgis of Tacitus, and Weser is a still more obvious derivative from the same form. After the confluence, the river flows first in a northerly direction, but gradually assumes a more and more westerly course parallel to ranges of hills which here rise above its right bank, until 3 miles above Minden 4

<sup>&</sup>lt;sup>1</sup> Length, 720 miles; area of basin, 55,340 sq. miles.

<sup>&</sup>lt;sup>2</sup> See below, pp. 518-21.

<sup>3</sup> Length, 280 miles, including the Werra, 450 miles; area of basin, 17,780 square miles.

<sup>&</sup>lt;sup>4</sup> Probably essentially the same name as Münden, the "mouth" referred to in this case being the gap mentioned in the text. It was at

it breaks once more northwards through the Westphalian Gate and there emerges on the north German plain. The position of this gap in a range of hills otherwise remarkably continuous, although known by different names (the Wiehengebirge on the west and the Wesergebirge on the east), has made it a point of strategical importance.

As a waterway the Weser is not of much importance except in its estuary, whereon stands the noted seaport of Bremen (p. 521). Barges can ascend to Wannfried on the Werra (in 51° 11′ N.) and Rotenburg (51° N.) on the Fulda, but for the most part only in winter. In summer Hameln, where there is a lock, is the usual limit of navigation.

The Oder is a shallow and rapid stream on which large sums have been spent in endeavours to convert it into a navigable channel. This expenditure has at last proved, to a large extent, satisfactory. A depth of about 5 feet at high water has been secured as high as Ratibor, about 480 miles above Swinemunde, but the usual limit of navigation is at Kosel, about 30 miles lower down. By a canal round Breslau, opened in September 1897, vessels of 400 tons are enabled to descend from Kosel, the port of the coal and zinc mining region of upper Silesia, to Stettin or Berlin. The Oder proper ends at the Stettiner Haff, which communicates with the Baltic by three channels—the Peene to the west of the island of Usedom navigable by vessels of about 8 feet draught; the Swine, between Usedom and Wollin. the principal outlet, the southern end of which, however. is now replaced by a canal called the Kaiserfahrt, and

Todtenhausen, a few miles to the north, that the battle of Minden was fought (Aug. 1, 1759), in which the Duke of Brunswick delivered Hanover and Westphalia from the French.

<sup>1</sup> Length, 552 miles; area of basin, 43,300 square miles.

the Dievenow, east of the island of Wollin, now navigable by vessels of only  $4\frac{1}{2}$  feet draught. Swinemunde, at the mouth of the Swine, can be reached by vessels drawing 22 to 23 feet, and above that port the Swine, Kaiserfahrt, and Oder, as high as Stettin can be navigated by vessels of 18 feet draught, but improvements are being earried out with the view of making the latter port accessible to vessels of still greater burden.

Engineering works have also been necessary to get cultivable land out of marshes. A notable feature of the valley of the Oder is a contraction at Oderberg in about 52° 50' N., where the high grounds on either side approach to within little more than a mile of each other, and another contraction a few miles above Küstrin, in 52° 30′ N., where they approach to within 3 miles. At Küstrin the Oder receives from the east its principal tributary the Warthe, enlarged by the waters of the Netze flowing in the same direction, so that the volume of the main stream is more than doubled. In consequence of this state of matters, two large alluvial plains have been formed, one on the banks (principally on the left bank) of the Oder, between the constrictions above mentioned, and the other on the banks of the Warthe extending upwards to Landsberg. These plains are known respectively as the Oderbruch and the Warthebruch, and were formerly impracticable swamps. The Oderbruch, which has a length of about 33 miles, with a width of from 7 to 16 miles, and an area of about 425 square miles, has been dry in its upper part from a remote period, but its middle and lower portion remained in the condition of marsh till it was drained by Frederick the Great between 1747 and 1752. The Warthebruch, which has a length of 30 miles, with a width of from

<sup>&</sup>lt;sup>1</sup> See below, p. 516.

5 to 10 miles, was drained by the same king, between 1767 and 1782, and between 1837 and 1842 its lower part about Sonnenburg was embanked after the manner of the Dutch polders. Both tracts are now extremely fertile.

It is worthy of note that all the great rivers of the German plain make an abrupt turn to the north about the middle of their course—the Weser, Elbe, and Oder about lat. 52° N. The Elbe and Oder once pursued a course different from that which they now follow—a course which carried their waters farther to the west. The latter once flowed through the Havel lakes into the valley now occupied by the lower Elbe, emptying itself into the North Sea, while the Elbe itself continued its course in the present bed of the Aller and Weser. This, like other features of the North German plain, is a consequence of the misfitting of the present drainage into a series of valley-ways carved by the abundant waters of the era when the ice finally left the district.

The largest of the lakes of Germany is the Bodensee, or Lake of Constance, which is partly Swiss (see Switzerland). As previously stated, the whole of the north of the plain bordering on the Baltic is studded with numerous lakes, but these are mostly very small. Although counted by the hundred their total area is only between 600 and 700 square miles. The largest (Müritz and Schwerin) are in Mecklenburg. The Bavarian lakes have already been referred to.<sup>1</sup>

## 5. Geology

Nothing can be simpler than the geological structure of the greater part of the extensive plain forming north Germany, Denmark, and most of the Netherlands; while that of the southern mountainous region is as complicated as are its orographical features. The plain is for the most part covered with Quaternary deposits of glacial date, and the numerous patches of older strata that are exposed all over the surface belong mainly to the Miocene epoch.

In order to understand the main geological features of the highland region, it is desirable to begin with the part intersected by the Rhine between Bingen and Bonn. There we have, it is true, not the oldest of the sedimentary rocks of Germany, but by far the most extensively developed of the Palæozoic strata in the area now under consideration. These strata, which are of Devonian age, stretch far away eastwards and westwards, covering, in the latter direction, the south-east of Belgium and a portion of the north-east of France. Scattered over it are numerous patches of trachytes and basalts (in the Eifelgebirge, the Westerwald, etc.); while the Vogelsberg, which is almost contiguous with part of its eastern boundary, is made up of similar eruptive rocks. Some of the best-known eruptive rocks on the Rhine are those which constitute the group of the Siebengebirge, or "Seven Mountains," at the north-west end of the Westerwald, opposite Bonn. The picturesque mass of the Drachenfels, rising to 1065 feet, consists of trachyte. A quarry on its side furnished the stone used in the construction of Cologne Cathedral. In the western section of the Devonian area the heights known as the Hohe Veen, on the borders of the Rhine province and the Belgian province of Liége, are mainly of Silurian age, and accordingly belong to the oldest sedimentary rocks represented in Germany. The Carboniferous strata occur at different localities on the borders of these Devonian rocks, and among these we have most of the VOL. I

great coalfields of Germany and Belgium, as well as the north of France. Thus on the borders of the east section are the coalfields of the Lahn valley, and on the northern boundary the still richer coalfields of the Ruhr valley; while on the borders of the western section are those of the upper Meuse (Namur and Liége), with an outlier at Mons; and on the south those of the Saar valley. In this last locality the Carboniferous rocks enclose a considerable tract occupied by quartz-porphyry, melaphyres, and other eruptive rocks, which are interesting on account of the large number of agates found in amygdaloidal cavities in the mother-rock, especially in the district round Oberstein on the Nahe. North of the Ruhr coalfields there are no strata between the Carboniferous and the Upper Cretaceous. The latter is here exposed amidst the Quaternary drift in considerable patches.

Looking next at the area intersected by the middle Rhine between Basel and Bingen, we find that in that part of the Rhine valley lies the dividing line between two great basins, in each of which is the same succession of strata, beginning with the oldest. In the south there are on opposite sides the gneissic and granitic masses of the Schwarzwald and the upper Vosges, with Devonian and Permian rocks occurring amongst the latter; but farther north we see distinctly the series of strata referred to. A line passing east and west through Heidelberg will traverse in succession, on both sides of the Rhine valley, all the three members of the Trias,— Bunter, Muschelkalk, and Keuper,—and the middle one (absent in England) is specially well developed on the east side. On both sides the Triassic series is followed by that of the Jura, the position of which is pretty well marked on the east by the Swabian Alps and the

Franconian Jura, while on the west it begins not far from the old frontiers of France, near Nancy, Metz, Luxemburg, and Sedan. On the west side the series is continued in France through the Cretaceous system to the Eocene and Miocene; but on the east the Cretaceous rocks are wanting, and the Jurassic deposits are immediately followed by those of Miocene age, forming a continuation of the Swiss plateau. Their boundary on the north is approximately indicated by the course of the Danube to within the Austrian frontier, while on the south they are limited by the zone of Eocene and Jurassic rocks, which stretch along the northern flanks of the Alps, from the Lake of Constance to Vienna. Germany, however, these Miocene deposits, occurring within the area just indicated, are to a large extent overlaid by quaternary drift.

The whole of the eastern basin now under consideration is bounded on the east by the gneissic and crystalline rocks which make up so large a part of Bohemia and Moravia, and to which belong the Böhmerwald, Fichtelgebirge, Erzgebirge, Riesengebirge, and Sudetes. The chief areas of the post-Triassic rocks belonging to it are those already indicated in the east and south-east; but the members of the Triassic series extend northwards with varied interruptions to about 52° 20' N., where they are succeeded by a few small patches of the younger series of the rocks belonging to the basin between the Teutoburger Wald and the Elbe. The Teutoburger Wald itself is formed mainly of Jurassic rocks. Among the interruptions that occur in the northern development of these Triassic rocks the most important are the Thüringer Wald, composed chiefly of eruptive and Permian rocks, and connected by the Devonian and Silurian strata of the Frankenwald, with the crystalline

rocks of Bohemia; and, secondly, the isolated Devonian, Carboniferous, and Permian formations, which, together with crystalline rocks, make up the Harz Mountains.

Returning once more to the valley of the Rhine itself between Basel and Bingen, we observe the correspondence between the rocks—both eruptive and sedimentary—on the two sides of the valley, and the idea naturally suggests itself that the separation of the equivalent strata must have been wholly the work of the river. But a closer examination of the geological structure of the region belies this suggestion. The valley certainly existed previously to Miocene times, and then became filled with deposits which were undoubtedly once continuous with those of the Swiss plateau, and have left isolated remains in various hollows of the Jurassic mountains now intervening. But previous to that time the river Rhine did not exist. The local evidence shows that the streams flowing in this valley when the Miocene deposits first became dry land must have had a southerly course, and the Rhine took its origin only after the last movements of upheaval in Switzerland gave this valley its gentle tilt to the north: and since then the Rhine must have hollowed out both the relatively broad valley between Basel and Bingen -winding about and shifting its course from age to age over the Miocene plain at its bottom—and also the picturesque gorge in the Devonian rocks, which it enters at the latter town. Since this period the bottom of the Rhine valley between Basel and Bingen has become mainly covered with Quaternary deposits.

Among the extinct volcanoes of Germany, the most interesting are those of the Eifel district among the Devonian rocks west of the Rhine. The cones enclosing

<sup>&</sup>lt;sup>1</sup> See Ramsay, "Physical History of the Rhine," in *Proc. of Roy. Inst. of Great Britain*, vol. vii. p. 279.

some of the crater lakes, or *Maare*, of the Eifel, consist not so much of true eruptive or igneous rocks as of fragments of the Devonian strata through which the volcanic matter has passed.

#### 6. Minerals

Among the mineral products of the German empire the most important are coal, iron, and zinc. In the production of the first two Germany ranks with Great Britain, France, and Belgium, among European states; and as regards zinc the German empire, along with Belgium, produces more than all the rest of the world. The position of the western coalfields has been briefly indicated in the section on Geology. The Belgian coalfields pass into Germany (Prussia) in the neighbourhood of Aachen (Aix-la-Chapelle). A few small coalfields connect this Belgian trough with the great Rhenish and Westphalian basin in the valley of the Ruhr. This is the most productive though not the most extensive of the German coalfields. It stretches for about 60 miles west-south-west to east-north-east, with a breadth of from 20 to 25 miles, and embraces an area of about 750 square miles within which the existence of coalfields has been proved by borings,1 the area over which the Coal Measures come to the surface amounting to 205 square miles.2 To the north of the east end of this coalfield coal is also worked at Ibbenbüren and

<sup>&</sup>lt;sup>1</sup> A boring in 1898 resulted in the discovery of a coal-seam at Nateln, a hamlet near Dinker in the district of Soest, about 22 miles east-northeast of Dortmund, which makes it probable that the area given in the text will have to be considerably enlarged.

<sup>&</sup>lt;sup>2</sup> In 1840 the production of this coalfield was under one million tons. Shortly after, the first coke blast furnace was erected in the basin, and in 1846 the Cologne-Minden railway was opened. After that the production

Osnabrück in the west of the Teutoburger Wald. In Saxony there are two basins—one in the Plauenscher Grund, near Dresden; the other the coalfield of Zwickau-Chemnitz, where much of the coal-producing area is buried beneath newer rocks. Farther to the east lies the great coalfield of upper Silesia. The whole extent of this coalfield, which extends into Poland and Czecho-Slovakia, has been very variously estimated (at from 1150 to about 2500 square miles, if we include the extreme points to which coal is known to extend).

Much more extensive than the beds of true coal in Germany are those of brown coal or lignite, which is a very important fuel in many parts of this area. These deposits form a western group on both sides of the Rhine, and an eastern group in the Prussian provinces of Saxony and Brandenburg.

Iron ores are abundant in many parts of Germany, but those of most importance, on account of their lying sufficiently near coalfields, are the fine spathic ores (carbonate of iron) in veins in the Devonian rocks near Siegen, 1 notably at Stahlberg, 1 about 10 miles north of Siegen, where a concession was granted as early as 1313 for the working of the ore, the deposits of Hesse-Nassau (on the Lahn between Diez and Wetzlar, 1 and farther north, on the Dill near Dillenburg 1), the brown hematite on the left bank of the Oder between Oppeln and Liegnitz in Silesia, and the red hematite of Schwarzenberg in the kingdom of Saxony (near the frontier south-south-east of Zwickau).

increased rapidly, the most rapid rate of decimal increase being between 1850 and 1860, when it amounted to 10.3 per cent per annum. In 1890 the production of this field reached 35.2 million (metric) tons; in 1896 it reached 44.9 million tons.

<sup>&</sup>lt;sup>1</sup> All these on the hilly ground in which the provinces of Westphalia, the Rhine, and Hesse-Nassau meet.

In Germany zinc is obtained near Aachen and in the mountains of upper Silesia, in the Schwarzwald and the Harz. Germany has lost to Belgium zinc mines in consequence of the rectification of the frontier in the neighbourhood of Aachen.

Of metallic products of less importance than iron and zinc the first place is due to lead, ores of which are found principally in the Prussian government of Aachen (Bleiberg), as well as in other parts of western Prussia, in the Harz, and in the kingdom of Saxony round Freiberg. Copper ores are not very abundant. They are principally found in the districts of Mansfeld and Arnsberg. One of the most famous copper ores is the Kupferschiefer, a bituminous shale of Permian age, containing only a small proportion of copper, but worked on a large scale in the neighbourhood of Eisleben and Mansfeld in Prussian Saxony. This ore has been known and worked for several centuries. It was in mines of this copper slate that the father of Martin Luther was employed. In addition to these, tin is found in the Erzgebirge between Saxony and Bohemia; silver is obtained from the mines of Freiberg in Saxony, and of the Harz; gold was formerly washed from the sands of the Rhine; bismuth occurs in Saxony; antimony in Thuringia and the district of Arnsberg; and nickel and cobalt in Saxony.

But more important than all these minor metals are the enormous beds of *rock-salt* found in various parts of Germany. This mineral is, in fact, obtained in all the states of the Germanic empire except the kingdom of Saxony, but most abundantly in the Prussian province of Saxony. The great deposit at Stassfurt in this latter province has been known since 1837 and worked since 1852; but since then several deposits of the same kind have been opened in other parts of the Prussian

monarchy,—that of Sperenberg in Brandenburg in 1867, that of Segeberg in Schleswig-Holstein in 1868, those of Inowraclaw and Wapno in Posen in 1871 and 1872. In Hanover, Würtemberg, and the south-east of Bavaria (Berchtesgaden, Reichenhall, etc.), there are other important salt-works. The salt-works at Stassfurt and Leopoldshall are celebrated not only on account of their common salt, but also on account of the extraordinary quantities of potassium salts which they yield. These salts are used in agriculture. A large deposit of gypsum is worked near Lübtheen in Mecklenburg.

The only other minerals that need be mentioned are the amber obtained from the coasts of the Baltic, especially between Memel and Königsberg, the phosphorite of Nassau, and the lithographic stones of world-wide celebrity derived from beds discovered in 1739 in the Solnhofen slates of the Oolites on the Altmühl in the Franconian Jura—slates of peculiar interest to the geologist from the fact of their having yielded a large harvest of beautifully preserved fossil remains, including those of the oldest known bird, the Archwopteryx.

## 7. Climate

In relation to its extent in latitude and longitude the temperature in Germany and the adjoining plains is remarkably uniform. The increase in elevation towards the south tends at the same time to reduce the temperature below that corresponding to the latitude, and to bring about the same extremes as we meet with in going from west to east. At Königsberg on the Baltic, in east Prussia, the mean temperature for January is 26° F., for July 63° F., for the whole year 44° F. At Bayreuth, on the Franconian plateau in Bavaria, the correspond-

ing temperatures are 28°, 63°, and  $45\frac{1}{2}$ ° F. The principal difference is in the winter temperature of the west, the part exposed to the influence of the Atlantic currents, and the east. At Emden on the North Sea the mean January temperature is 36°, at Utrecht  $34\frac{1}{2}$ °, at Münster in Westphalia 34°, while at none of these places does the July temperature exceed 65½°. With these may be compared Königsberg, Bromberg in Posen, and Breslau in Silesia, the January temperature of which is 26°,  $27\frac{1}{2}$ °, and 28° respectively, while in none of them does the July temperature exceed 65°. Friedrichshafen, on the Lake of Constance, in the extreme south, the July temperature is only  $66\frac{1}{2}$ °, and that of January 31°. The warmest parts of the country are in the sheltered part of the valley of the Rhine between the Vosges and the Black Forest, and in the valley of the Main, in both of which localities the almond and the chestnut mature their fruits. Karlsruhe, in the former district, the mean January temperature is 33½°, that of July 68°, that of the whole year 51°. The exceptionally high winter temperatures at the north base of the Thuringian Forest (Goldene Aue, etc.) and the Harz are attributed by Assmann 1 mainly to the influence of föhn winds, but partly also to other indirect effects of the interposition of mountains in the way of moisture-laden winds-more sunshine, less loss of heat by evaporation, less snow.

The records of the rainfall at the different stations in Germany have been analysed by Dr. J. van Bebber.<sup>2</sup> As

<sup>2</sup> See "Die Vertheilung des Regens über Deutschland" in Petermanns Mittheilungen, 1878.

<sup>&</sup>lt;sup>1</sup> Assmann, "Der Einfluss der Gebirge auf das Klima von Mitteldeutschland" (in Forschungen zur Deutschen Landes- und Volkskunde, vol. i.), Stuttgart, 1886, p. 49.

regards the period of the year at which the heaviest rains fall, he finds that three regions may be distinguished, although their boundaries are not very sharply marked off from one another. The most extensive region is that in which the summer rains predominate, embracing the whole of Germany, with the exception of the west coasts (including the Netherlands), under the influence of the Atlantic and the North Sea. The predominance of summer rains, which is one of the characteristics of a continental climate, is all the more marked the farther we advance from west to east and from north to south. The west coasts, like those of Norway, Britain, and France, have the highest rainfall in autumn; there is a high autumn rainfall on the eastern shores of the Baltic, and a high winter one in the Palatinate of the Rhine. In general the area in which the rainfall during a single season of three months exceeds 5 inches is smallest in winter and increases from spring to summer, declining again in autumn. In all the mountainous districts from the Riesengebirge westwards the rainfall is never under 10 inches during any of the four seasons of the year. Throughout the entire area of which we are speaking the rainfall declines on the whole from west to east and south-east, so that the Silesian plain lying in the "weather-shadow" of the Riesengebirge has the smallest rainfall in the whole of Germany, the total amount for the year being there generally under 23 inches, in some parts much lower. The Rhine valley between the Vosges and the Schwarzwald, as it is sheltered from cold by these highlands, so also is it sheltered from rain, and is accordingly always drier than the higher ground on either side. During the winter months its rainfall is under 5 inches from Basel to Strassburg, and thence north-westwards to Saarbrücken. The Harz Mountains are notorious throughout Germany for their almost constant mists and rains, the reason of which is that they are the most isolated of all the high ranges of Germany with a direction from south-east to north-west, that is, at right angles to the course of the chief rain-bringing wind, the south-west. The rainfall on the summit of the Brocken amounts to about 66 inches in the year.

## 8. Vegetation and Animal Life

It has already been stated 1 that the whole of Germany belongs to what Grisebach has designated the Northern Forest Region of the Eastern Continent, that is, of the Old World, and there is abundant evidence to show that forests are indeed the characteristic vegetation of central Europe. The extent of the forests has been enormously diminished within historical times; but in most parts of Germany it is still found that where a piece of ground is left to itself for a few years it gets covered, first with shrubs, and in the end with trees, especially conifers. Eight years have been known to suffice to cover a neglected piece of ground with a coppice in which the stems were as high as a man.2 From documentary and other evidence it has been shown that as late as the close of the first millennium of the Christian era the whole of the south-east of Bavaria, together with the adjoining parts of the Austrian Alps, was occupied by an almost continuous expanse of forest, on which, however, advancing cultivation was then steadily making inroads.3 Of the magnificent relic of the ancient forests in the opposite

See Introduction, p. 45.
 Ausland, 1882, p. 186.
 Ibid. pp. 208, 210.

corner of Bavaria, the Spessart, some account has been given in a previous section. As might be expected, the forests are now mainly, but by no means wholly, confined to the mountains, all of which are still well wooded. The luxuriance of the woods, however, is greatly affected by secondary causes, among which the nature of the soil seems to take the chief place. An abundant rainfall is almost always necessary for the maintenance of great forests, but, as we have just seen, this is nowhere wanting among the highlands of Germany. But much depends upon whether the soil is of such a nature as to retain the moisture or to allow it to pass off rapidly, the finest forests being always found on soils of the first kind. It is to this cause that Ratzeburg ascribes the magnificence of the forests on the basalt rocks in the region of the Weser and on the trachytes of the Rhine.1 The finest beech forests in Germany are found on the Baltic and on the calcareous soils of the chains of hills in the Weser district. Oak forests are rarer; but, besides that of the Spessart, there are well-preserved forests of this kind, containing many magnificent trees, on the banks of the Elbe in Anhalt, and on the alluvial soil on the banks of the Oder in Silesia. Forests of Norway spruce adorn the Sudetes and the Harz, and the silver firs of the Black Forest include the noblest specimens of their kind to be found in Europe.

The influence of the sea climate on the vegetation of Germany is very marked, and all the more since the effect of latitude on climate is counteracted, as we have seen, by the rise in elevation towards the south. Hence we find that the limit of certain forms which cannot stand a severe winter is an easterly one. Perhaps the best illustrations of this fact are to be found in the gorse

<sup>&</sup>lt;sup>1</sup> Grisebach, Vegetation der Erde, i. 158.

or whin and the holly, neither of which will grow at a greater distance than 100 miles from the coast. The former, though indigenous in the region round Osnabrück in western Hanover, dies out in eastern Hanover, for example, in the neighbourhood of Göttingen, where it was at one time tried for hedges; and the latter, though widespread among the beech forests near the North Sea, steadily diminishes in size and finally disappears as we advance inland.<sup>1</sup>

Large as the area of Germany is, its flora contains not a single member peculiar to the region.<sup>2</sup> The continuity of the plains with those on the east and west, and the continuity of its mountains with those on the south, enable it to exchange its vegetable forms on all sides. Hence Germany appears to be a centre of vegetation for the whole of the north temperate parts of Europe, and it is for that reason that the term "Germanic flora" is often applied, as stated in Chapter I., to the characteristic flora of these regions.

The forests of Germany are infested by badgers, wild cats, wild boars, martens, and other wild animals, including even wolves. These last, however, are now chiefly confined to the Ardennes, and the more noxious of the wild animals generally are in process of extermination.

## 9. Extent, Constitution, and Government

In 1914 the German Empire was based on the treaties between the states of the former North German Confederation and the South German States (November 15, 23, and 25, 1870, and ratified on January 9, 1871), and on the law decreeing the incorporation of Alsace-Lorraine passed on June 9, 1871, after these

<sup>&</sup>lt;sup>1</sup> Grisebach, Vegetation der Erde. i. 97.

<sup>&</sup>lt;sup>2</sup> Ibid. i. 212.

two provinces had been ceded by France to Germany at the treaty of peace concluded in Frankfurt-onthe-Main on May 10, 1871. The German empire accordingly consisted of twenty-two sovereign and three republican states, besides the imperial district of Alsace-Lorraine, in which the Emperor exercised political power. The King of Prussia was also at the same time Emperor of Germany, which, as then constituted, was a confederacy of states with constitutional forms. Hence, according to the intention of the powers framing the constitution, the German empire was a monarchy, and the head of the government a sovereign, who, however, did not exercise without restraint the supreme power inherent in the confederacy. On the contrary, the constitution, as representing the imperial authority, named as the president of the confederacy, in the first instance, the King of Prussia, with the title of German Emperor; then a Confederate Council, consisting of the plenipotentiaries of all the separate states; and lastly, the parliament or "Council of the Empire," chosen by direct election as representing the whole nation. All imperial measures, which required to be passed by a majority of the two assemblies just mentioned, received their binding force by imperial proclamation. The administration of the empire was entrusted to the Imperial Chanceller, who, though named by the Emperor, was constitutionally responsible, was president of the Confederate Council, and controlled the general management of affairs; while local affairs were regulated by the different states of the empire, the diplomatic representation abroad, the control of the army and navy, the control of the general finances, and of the railway, the post-office, and the telegraphs all lay within the domain of the federal representative bodies and officers of state. Germany became a republic in 1918, and a federal republican constitution was promulgated in 1919. The constituent republics are treated in subsequent sections. It is not at all clear exactly how far the monarchical and imperialistic elements of the population have become reconciled to republican institutions; nor is it certain that the industrial and financial magnates who exercised considerable influence under the Kaiser are working in harmony with the republican government. By devious means the mark was forced to so great a decline in value for purposes of foreign exchanges that German trade with the rest of the world became completely disorganised on the financial side, and the non-fulfilment of German obligations finally led to the occupation of the Ruhr by the French and Belgians in co-operation.

# 10. Agriculture, Manufactures, Trade, and Commerce

The inhabitants of the German empire still derive their support more largely from the cultivation of the soil than from any other branch of industry, although, with the exception of the terrace lands sloping from the central highlands, and most of the river valleys, the ground is not very fertile. But agriculture, for the improvement of which technical schools and model farms have been established in all the German states, has arrived at such perfection as to be surpassed by western Europe alone. Various cereals, especially rye, oats, and wheat, are cultivated, besides potatoes, vegetables, root and green crops, amongst which sugar-beet is of great importance, excellent fruits and wine. The numerous German wines, those especially of the highly favoured Rhine valley, enjoy a general and well-deserved reputation.

The encouragement given by the state to the higher

commercial and technical education in all parts of the country is admitted on all hands to have had a marked effect on the development of manufacturing industry in the empire, and the extent of this encouragement has never exceeded that bestowed in recent years. A visit of some of the members of the Technical Instruction Commission of the United Kingdom to Germany in 1896 enabled them to make a comparison with the state of matters observed by them on the occasion of a previous visit in 1884, and they report that whereas in the former year the total attendance at the German polytechnics was little more than 2000, in 1896 there were 3000 students at the Imperial Physical Institute at Charlottenburg alone. The general result of the advance in recent years is thus summed up by the writer of this report:-

"Germany is making enormous strides, and notably in those manufactures in which superior knowledge, technical skill, and the agency of the expert in chemistry or other sciences can be brought to bear. This holds good to a remarkable degree in certain industries concerning which we had special means of forming an opinion, namely, in the electrical trades and in the cognate branches of electrical engineering, as also in the colour manufacture and in various applications of printing involving artistic and scientific skill."

The several German manufacturing industries are not localised to the same extent as those of the British Isles. All the great textile industries are carried on more or less on and near the coalfield of the Ruhr, in Saxony, and in Silesia. In the north-west Elberfeld-

<sup>1 &</sup>quot;Report on a Visit to Germany," etc., Parl, Paper [C.-8301], 1896,

Barmen <sup>1</sup> is the most important seat of the textile manufactures generally. Krefeld <sup>2</sup> is noted for its silk, an industry introduced in 1656, and locally favoured by the excellence of its water for dyeing, now also by its admirably equipped and organised weaving and dyeing school completed in 1883, and since then doubled in size. In the north-west also are the principal seats of the iron and steel industry in all its branches—Essen,<sup>3</sup> with the famous Krupp steel works, the largest in the world, Remscheid and Solingen, with manufactures of cutlery and edged weapons. Linen is a specialty in Lusatia, Silesia, Westphalia, and Ermeland. The beetsugar industry is naturally carried on principally in the sugar-growing districts, Magdeburg <sup>4</sup> and Halle <sup>5</sup> being specially noted under this head.

Hitherto the home market and those on the mainland of Europe have been by far the most important for the produce of German industries, and it may be noted that for the development of this trade Germany has an enormous natural advantage in its central situation—an advantage that every year enables German manufacturers to turn to account more fully, as the steady expansion of the continental railway system and the improvement of waterways <sup>6</sup> makes a wider and wider area accessible

<sup>&</sup>lt;sup>1</sup> Municipally different, geographically one—a long town stretching about 5 miles along the banks of the Wupper, but narrowed in one place to about a quarter of a mile in width (between river and railway), where a hill known as the Hardtbusch, across which the boundary runs, advances up to the river and confines the town to the left bank. Joint pop. (1815-16), 41,000; (1871), 140,000; (1890), 236,000; (1895, comm.), 266,000.

<sup>&</sup>lt;sup>2</sup> Pop. (1816), 14,000; (1871), 57,000; (1890), 105,000; (1895, comm.), 107,000.

<sup>&</sup>lt;sup>3</sup> Pop. (1816), 5000; (1871), 51,500; (1890), 79,000; (1895, comm.), 96,000.

<sup>&</sup>lt;sup>4</sup> See p. 550. 
<sup>5</sup> See p. 559. 
<sup>6</sup> See pp. 475-80. 
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without break of bulk. This consideration is specially important in the case of the bulkier commodities, such as coal, iron wares, leather, glass, woollens, etc. From this point of view England, notwithstanding all her natural advantages for a world-wide commerce, is obviously worse placed than Germany for some of the most extensive and profitable markets of the continent. But one of the most striking features of the growth of German commerce in late years has been the rapid increase in the amount of the exports of German manufactured goods of various kinds to trans-oceanic markets. This may be recognised as partly a natural development, but it is largely due to artificial stimulation in the form of government bounties (on sugar) and enormous subsidies to the steam-shipping interest. In consequence of this encouragement the mercantile marine of Germany has rapidly increased of late years, and this has been accompanied by the creation and rapid growth of a large shipbuilding industry at Stettin, Hamburg, Emden, etc.

The strong tendency of the people to settle permanently in foreign lands,<sup>2</sup> where they never renounce

<sup>&</sup>lt;sup>1</sup> Tonnage of German mercantile marine. (The figures in parentheses give the tonnage under the new method of measuring adopted in 1895):—

Date. Jan. 1.	Thousand Tons.		
	Steamers.	Sailers.	Total.
1871	82.0	900.4	982.4
1881	215.8	965.8	1181.6
1891	723.6	709.8	1433.4
1897	1039.2	610.8	1650.0
	(891.9)	(601.6)	(1493.5)
1914	2832.3	487.8	3320.1

<sup>&</sup>lt;sup>2</sup> German emigration reached its maximum in the years 1881-85, when it amounted to upwards of 850,000 for the five years (steadily sinking

their own nationality sooner than any other European people, has, however, meantime, given occasion to the establishment of German commercial houses in every part of the world.

# 11. Towns—General Conditions determining their Importance

In Germany as elsewhere it is not possible to find in every case in geographical conditions alone an adequate explanation of the relative importance of different towns. In Germany, indeed, this is less to be expected than in most other countries in Europe, seeing that through so many centuries political division has had such an effect on the development and distribution of the population, and many considerable towns owe nearly all their consequence to the fancy of some local prince. Nevertheless, in most cases the influence of purely geographical conditions is more or less traceable, and in some instances of great importance. But with reference to these conditions it is important to distinguish between those which may have contributed to determine the precise site of a town, and those which belong to the district in which the town lies. It is the latter that are most likely to be operative through long periods and under a variety of political and other conditions. The circumstances that may have determined the precise site of a town at its origin often cease to have any significance in consequence of physical changes sometimes comparatively trifling or as a result of economic development. When this happens, the town may continue to grow just where it was originally

from 221,000 in 1881 to 110,000 in 1885). Since then it has fluctuated, but since 1893 it has never reached 41,000. It is always mainly directed to the United States.

planted; but if any rival happen to start up in the district enjoying the same geographical advantages of a more general character, all that tends to promote the growth of the rival may tend in the same degree to bring about the decline of the earlier town.

Both in north and south Germany the circumstances that determined the precise site of towns have in many cases lost much of their value, though this is more frequently true in the great north German plain than among the valleys of the south. In north Germany the sites of towns seem to have been principally determined by the convenience of river-crossings, and this again depended in the first place on the general direction of the routes through the firmer ground lying between scarcely passable or absolutely impassable marshes, and, in the second place, on the nature of the river banks and the character of the river itself at the crossing place.1 These two conditions are now, it need scarcely be remarked, of comparatively little moment. In south Germany the position is more frequently determined by the relations of different valleys and their streams. These conditions are more enduring, and their value with reference to towns is often equally permanent.

Both in north and south Germany the value of navigable rivers with respect to towns has been considerably modified within historical times in more ways than one. As has been stated already, the present Germany was at the time of the earliest historical notices of the region to a large extent covered with forests and marshes. As the forests became cleared and the marshes drained, and in consequence of that com-

<sup>&</sup>lt;sup>1</sup> See F. G. Hahn, *Die Städte der Norddeutschen Tiefebene in ihrer Beziehung zur Bodengestaltung*, more particularly (on the point here referred to) p. 8.

munications by land routes were improved, the importance of rivers as waterways became relatively diminished. Even yet, however, navigable rivers are of no little value, and though far from being enough to explain the importance of towns on their banks, are among the causes that still help to concentrate a variety of geographical advantages on some particular point rather than on another neighbouring point in other respects equally favoured. But, further, the clearing of forests has had a direct effect upon navigable rivers. Though it is now recognised that the existence of forests has no appreciable effect on the total rainfall of an extensive region at least in the temperate zone, yet the existence of forests and marshes has an important effect on the behaviour of the rain water when it reaches the ground. Where there are forests and marshes or imperfectly drained land, the water flows into the streams more gradually than where forests and marshes have been gained for cultivation. Hence the rivers are maintained normally at a higher level, instead of alternating between flood and low water. This may often explain why rivers that were navigable formerly to a certain point are no longer navigable so high up. Charlemagne and his suite are recorded by Eginhard to have travelled by water from Ansbach on the Franconian Rezat to Würzburg, a distance of about 175 miles by water, against 47 miles direct, and not much more than 50 miles by road or rail at the present day. This may be taken as a clear indication that in those times there was no convenient land-route between the two places; and it is also to be noted that now the Franconian Rezat is not navigable at all, and the remainder of the route as far as the Main only by means of a canal.

The oldest towns in Germany are those on the Rhine



and the Danube and the portions of the basins of these two rivers which for a longer or shorter period formed part of the Roman empire. Both of these rivers have been of great importance as waterways from a very early date. A special degree of importance belongs to the Rhine and its valley on account of the character of the country which it traverses. While the soil and climate are peculiarly favourable to an agriculture of a rich and varied kind, the narrowness of the valley and the difficulty of traversing the adjoining highlands in the direction of its flow through the greater part of its course in Germany have from the remotest times directed a stream of commerce along a narrow channel in this region. It formed one of the routes by which, in ancient days, the Etruscans carried their bronzes to the shores of the North Sea to give in exchange for the amber collected there. The importance of this channel is now shown by the fact that from Mainz to Cologne two double lines of railway follow the banks of the river, and between Cologne and Duisburg three double lines

## 12. Prussia

From the coronation of the first king, Friedrich I., in Prussia on 18th January 1701 the kingdom expanded by successive conquests until in 1914 the Prussian King was hereditary German Emperor, and Prussia and the kingdom contained two-thirds of the population and embraced two-thirds of the area of the Deutsches Reich. On 13th November 1918 Prussia became a republic. Practically the whole of the territorial losses in Europe of the German Empire by the Treaty of Versailles fell upon Prussia; which lost part of Schleswig to Denmark; part of West Prussia, Posen and Silesia to

Poland; a small fragment of Silesia to Czecho-Slovakia; the districts of Eupen and Malmédy, the zinc mineral districts, from the Rhine province, to Belgium; the Saar coalfield fell under French control and the Rhine became a temporary frontier, and, later, even the Ruhr area fell under foreign control until post-war obligations had been satisfactorily considered.

Prussia is almost wholly lowland. Beginning in East Prussia at the Memel, it extends with a break for the Polish corridor and the city of Danzig to the Dollart, so as to surround Mecklenburg and Odenburg; this is all part of the North German plain. In the west an extension up the Rhine valley to the Main with Hesse-Nassau and Westphalia are part of the South German uplands. Prussia is thus able to exert physical control of the waterways, for almost all the existing and proposed German canals are in Prussia, and also commercial control of trade for the chief railways and seaports are either Prussian or, as in the case of Bremen and Hamburg, surrounded by Prussia.

East Prussia, now detached from the rest of the state, is a section of the Baltic heights with much morainic material, a haff coast-line, and inland the extensive area of the Masurian lakes; it is almost entirely surrounded landwards by Poland, and has one large town, Königsberg, a Baltic port. The town arose round a castle erected on a oak-clad height on the banks of the Pregel in 1255, and named by the knights of the Teutonic Order in honour of Ottocar of Bohemia, who had conquered the region for them. Its position soon made it the seaport for the region drained by and communicating with the Pregel. Both it and Danzig have important trade relations with Russia, Königsberg being

<sup>&</sup>lt;sup>1</sup> (Königsberg), pop. (1919), 261,000.

directly connected by a double line of railway with the Baltic provinces, and Danzig by a double line with northern Poland. Königsberg, which is now a fortress, has been since 1544 the seat of a university, the Albertina, founded by Duke Albert, which has been rendered famous by the long professorship of the philosopher, Immanuel Kant.

Berlin, the capital of Prussia, and the capital of the German republic, stands on a site that cannot be said to possess any great natural advantages. The uniformity of the great German plain rendered it natural, if not almost inevitable, that once the natural obstacles to communication were subdued, some one power should obtain dominion over a wide area. It was equally natural that the capital of that dominion should be in a more or less central position, but only historical events can explain the fact of its being fixed at Berlin. Yet the geographical conditions that explain the growth of a town of some local importance on this site are clear enough. The first settlement in this locality was formed in the beginning of the thirteenth century on an island in the Spree, Kölln, high enough to be in part beyond the reach of the highest floods, and situated at that part of the river where the heights of Barnim on the north. and those of Teltow on the south, approach nearest to its banks. A village then grew up at the end of the bridge connecting this island with the Barnim side of the Spree, and this village, on the right arm of the river, became the nucleus of Berlin. From the nature of the physical features this point became a crossing-

<sup>&</sup>lt;sup>1</sup> (Berlin), pop. (1688), 18,000; (1788), 150,000; (1816), 198,000; (1850), 440,000; (1861), 546,000; (1880), 1,112,000; (1890), 1,578,800; (1919), 3,804,000. This last figure embraces areas which were not included in the earlier enumerations.



place, not merely from north to south, but also for wide regions in the south-west and the north-east. The direction of the Havel, with its numerous expansions, necessitate two difficult crossings on such journeys if a more westerly point is chosen. Hence for Brandenburg, Berlin is naturally an important centre. The elector John Cicero established the princely residence here about the end of the fifteenth century, but it was not



BERLIN: UNTER DEN LINDEN.

till after the conquests and acquisitions of "the great elector," Frederick William (1640-88), that Berlin began to grow into a considerable town. It was in his time that the Spandau, Stralau, and other suburbs arose, and the celebrated street known as Unter den Linden began to be laid out. Not till 1709 were the five independent towns of Alt Berlin, Kölln, Friedrichswerder, Neustadt, and Friedrichstadt formed into one. Since then the growth of Berlin has been constant, and it now possesses all the attributes of a great capital, except that

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it does not contain the supreme imperial courts of law. Its university, founded in 1809, is now the most important in the State.

On the island on which once stood the town of Kölln are now situated the Royal Palace, the Cathedral, the Old and New Museum, the National Gallery, and other important buildings; and from it "Unter den Linden," the finest and most frequented thoroughfare in Berlin, leads westwards to the Brandenburg Gate.

Eight and a half miles due west of the royal palace in Berlin is the fortress of *Spandau*, on the Havel, and 17 miles south-west of the same point, on an island formed by the Havel and the Barnim-Paretz Canal, stands the old fishing village of *Potsdam*, converted into a "German Versailles" by Frederick the Great, and now containing several royal palaces (including the celebrated Sans Souci), besides a strong garrison.

The central situation of Berlin is illustrated by its rail-way position; Dresden, Breslau, Hanover, and Hamburg are five hours distant by rail; Königsberg, Oderberg, Nuremberg, Mainz, Cologne, and Emden are ten hours away.

To the west of Berlin Magdeburg occupies a position on the Elbe naturally of much more importance than that of Berlin, so that with respect to it one might almost say that it is only adverse historical events that have prevented it from being the capital of Germany. Situated about the middle of the German plain and about the middle point of the broad navigable river that bisects that plain, it is at least from these circumstances alone in a position fitted to make of it an important commercial centre for a wide region, and there are other advantages besides. From the first it has been important as a crossing-place of the Elbe, and as a town at a rivercrossing its position is in many respects typical. Above

there is a broad low-lying valley with side branches and dead arms of the Elbe, and there is the same below between the Neustadt and the mouth of the Ohre. The lower course of the Ohre below Wollmirstedt is part of an old bed of the Elbe, and belonged to that river at least as late as 1136. At Magdeburg, however, a steep firm bank advances close up to the Elbe, and on the other side a tract of comparatively dry land advances to the river bank directly opposite. In the river itself are islands, which are not met with for a considerable stretch above or below. Hence various circumstances combined to make this spot from the first an easy crossing-place, and afterwards to facilitate the bridging of the river. Even yet there is no other bridge for ordinary traffic for 70 miles above or below Magdeburg, the nearest being those at Wittenberg in the same province, 70 miles up stream, and at Wittenberge in Brandenburg, 79 miles down stream. Commercially it is likewise important that Magdeburg is situated near the point where the river makes a considerable change in its direction, so as to lead to the landing of goods that have in consequence to be transferred from the river to land routes. Further, an extremely fertile, chiefly sugar-growing region here lies on the left bank of the Elbe,2 and the whole region to the south has long been one of the richest and most populous in Germany. For a great industrial and commercial centre under modern conditions all that it lacks is coal. Nevertheless its commercial importance is clearly indicated by the fact that six double lines of railway radiate from it in different directions, a greater number than from any other town in the empire except Berlin. But while geographical conditions are thus favourable,

<sup>&</sup>lt;sup>1</sup> See Petermanns Mitteil. 1889, p. 177.

<sup>&</sup>lt;sup>2</sup> See Hahn, ubi supra (p. 516), p. 52.

history, as already indicated, has been adverse. Magdeburg is first mentioned in 805. It is said to have been founded by Charlemagne, but this is only a surmise. In the following century it flourished under the care of Otho the Great (936-973), who gave it as a wedding gift to his wife Edith, daughter of the English king, Edward the Elder, and consequently grand-daughter of Alfred the Great. It was Otho's favourite residence. At the request of his wife he founded a monastery, originally outside the town, and granted to it the tolls of the city —a sign that it had already become important as a seat of trade. In 968 he succeeded in obtaining from the Pope the establishment of an archbishopric at Magdeburg, and the city afterwards fell under episcopal rule, which was not favourable to commercial development. Having adhered to the Reformation, it was taken by Tilly during the Thirty Years' War and ruthlessly sacked (20th May 1631), a disaster from which it was long in recovering.1 Not till 1680 did it become part of the dominions of the house of Brandenburg, and then it was on the outskirts of that dominion, which had already, as we have seen, fixed its seat at the then more central town of Berlin. In the last century, however, it grew with great rapidity 2 as a centre of industry (especially sugar refining) as well as commerce. It is also an important fortress. There is a citadel on the island in

<sup>&</sup>lt;sup>1</sup> Before the sack it is said by Schiller, I do not know on what authority, to have had a population of 30,000. In February 1632 only 357 persons had returned to the old town and 92 to the suburbs. In 1644 the total population amounted to only 2464. F. W. Hoffmann, Geschichte der Stadt Magdeburg (Magd. 1885), ii. p. 316.

<sup>&</sup>lt;sup>2</sup> Pop. (1816), 35,400; (1840), including Neustadt and Sudenburg (annexed in 1867) and Buckau (annexed in 1887), 57,800; (1890), 202,000; (1919), 286,000. No town is more likely to benefit by the projected scheme of improvements in the waterways.

the river. Walls surround the town, which is also encircled by a ring of thirteen forts.

Hanover 1 is situated at the head of navigation on the Leine, and enjoys the advantage which the valley of that river affords as a route through the hilly country to the south lying between the Harz Mountains and the Teutoburger Wald, a route the importance of which is now clearly shown by the fact that a double line of railway follows it in all its windings.

East of Berlin another important crossing-place marked out by nature occurs at *Frankfurt*,<sup>2</sup> where the valley of the Oder, which expands to 2 or 3 miles in width immediately below and a short distance above, is contracted by the approach of the high grounds on opposite banks to within about a mile of one another.

A still more important crossing-place is that of Breslau,<sup>3</sup> the chief town of Silesia, and for many centuries by far the largest town in the region in which it lies. Here also islands in the river have determined the selection of the site, perhaps as facilitating defence as well as trade, for there are in the vicinity crossing-places of the Oder equally convenient, if not more so. At Breslau, for instance, in approaching from the west, several minor rivers (the Weida, Lohe, and Weistritz) have to be crossed, whereas no such disadvantage is connected with the crossing at Dyhernfurt, lower down, which seems to have been that made use of on the old Etruscan route to the amber deposits of the Samland, and which is now made use of by the railway from Breslau to

<sup>&</sup>lt;sup>1</sup> (Hanover), pop. (1812), 21,000; (1871), 87,600; (1880), 122,800; (1890), 163,600; (1919), 393,000.

<sup>&</sup>lt;sup>2</sup> (Frankfurt), pop. (1816), 15,000; (1861), 36,600; (1880), 51,100; (1919), 65.000.

<sup>&</sup>lt;sup>3</sup> (Breslau), pop. (1816), 75,000; (1861), 145,600; (1880), 272,900; (1890), 335,200; (1919), 528,000.

Wohlau. Nevertheless, Breslau, which is said to have been founded in 758, was already an important place in 1000, and has never had a rival as a centre of exchange for the agricultural produce of the east and the mineral and industrial products of the region lying to the west and south-west.

From the earliest times the most important town on the Rhine has been Cologne 1 (Köln), which still retains in different forms part of its ancient Roman name of Colonia Agrippina. It is situated on an expansion of the river plain below the forest-elad heights of Ville, where the road from Paris by way of the Oise, Sambre, and Meuse, as well as that from Antwerp and Bruges by Maastricht which joins the former at Aachen, reaches the river, and at a point whence roads (and now railways) diverge northwards and southwards on the right bank The town is connected with Deutz, which since 1888 has been included within its municipal limits, by a fixed bridge, serving both for the railway and other traffic, and a bridge of boats; and a ring of forts on both banks surrounds the whole town. The cathedral, one of the most beautiful Gothic edifices in the world, was begun in 1248 on the site of an older church which had existed from the 9th century, and was partially burnt down in that year, but was not completed till 1880. The river front has a six-mile stretch of docks, which are 180 miles from the sea. As a river-port Cologne has greater natural advantages than Paris or any other town in Europe.

Bonn, at the mouth of the gorge of the Rhine, has easy communication westwards across the southern end of the Ville, and stands nearly opposite the mouth of the right-bank tributary of the Sieg, which

<sup>&</sup>lt;sup>1</sup> (Cologne), pop. (1804), 40,000; (1861), 120,600; (1880), 144,800; (1890), 281,700; (1919), 634,000.



COLOGNE: THE CATHEDRAL AND THE BRIDGE OF BOATS.

flows through an important valley, as regards communication, across the Westerwald and the Sauerland. The next important town higher up is *Coblenz*, in which survives the Latin name of Confluentes, marking the confluence of the Mosel and the Rhine at the end of a high peninsula facing the fortress of Ehrenbreitstein. This fortress, which is reckoned as belonging to Coblenz, and not to the town at its base



EHRENBREITSTEIN.

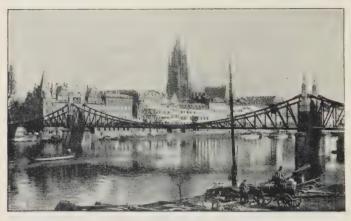
to which it gives name, occupies a rock 575 feet above sea-level, 385 feet above the river. Taken by the French in 1799 it was razed by them to the ground, but was re-erected after 1816, and strengthened by outworks—Fort Asterstein, etc.

On the south slopes of the Taunus lies Wiesbaden, not on the river, but beautifully situated amidst vine-yards and orchards. East of this watering-place lies Frankfurt, the chief town on the Main, and one that

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<sup>&</sup>lt;sup>1</sup> (Frankfurt), pop. (1817), 41,500; (1871), 91,000; (1880), 136,800; (1890), 180,000; (1919), 433,000.

from a very early date has had an important place in German history. Its name means "ford of the Franks," and a legend says that the ford of the river at this place was shown by a deer to Clovis, king of the Franks, when he was leading an expedition against the Alemanni in 496. Mention of the place is found in a document as old as 793, and in the following year it appears as a considerable town, and Charlemagne, who is said to



FRANKFURT ON THE MAIN.

have crossed the river at this place in his campaign against the Saxons, here built a hunting-seat, which was enlarged into a royal palace by Louis the Pious, who surrounded the town with walls (838). After the treaty of Verdun in 843 it became the head of the East Frankish empire. From 1152 onwards it was the regular place of election of the German emperors, and from 1815 to 1866 it was the seat of the diet of the Germanic Confederation. It is also interesting from containing the house in which Goethe was born (28th August 1749). The exact site of the town was fixed

partly by the ford to which it owes its name, and partly by the facilities for bridging the river, which is here divided by small islands; but the broad geographical features of the surrounding country are such as to require the existence of an important town at this spot, or somewhere near it, at all times. It lies where the rich valley between the Vogelsgebirge and Knüllgebirge on the one hand, and the Devonian slate plateau with the Taunus on the other hand, debouches on the Main, and at the north end of the valley of the middle Rhine stretching to Mulhouse and Basel, and is connected by easy natural routes with Thuringia, Württemberg, and Bavaria. At the present day the importance of these features is shown by the fact that double lines of railway converge on Frankfurt from both sides of the Vogels- and Knüllgebirge, and that from the eastern of these two lines (that following the valleys of the Kinzig and the Fulda) one double line runs from near the north end eastwards by Eisenach, Gotha, and Erfurt to Halle and Leipzig, while another double line runs from the south end southeastwards to Würzburg and Nürnberg. South of the Main again another double line runs due south by Darmstadt to Karlsruhe, and then along the base of the Black Forest to Basel. In recent times the advantage of the river has been increased by regulation works. With the aid of locks, boats drawing nearly 8 feet are enabled to ascend to the lower part of the town; up-stream traffic requires the aid of a chain picked up from the bed of the river.

Below Cologne lies the industrial portion of the Rhine province and Westphalia based on the Ruhr coalfield. Düsseldorf is a hardware centre on the right bank of the river; lower down is the great river-port of Duisburg-Ruhrort, where the Rhine barges concentrate

with iron ore, coal, and metal manufactures for Essen, Dortmund, Barmen-Elberfeld. Crefeld and Aachen are textile centres west of the river.<sup>1</sup>



On the Baltic lies *Stettin*,<sup>2</sup> which derives importance not merely from its position at the mouth of the Oder, but also from the fact that it is the nearest seaport to

<sup>2</sup> (Stettin), pop. (1816), 24,500; (1861), 61,000; (1880), 92,000; (1890), 116,000; (1895), 141,000; (1919), 233,000.

<sup>&</sup>lt;sup>1</sup> (Düsseldorf), pop. (1919), 407,000; (Duisburg), pop. (1919), 244,000; (Essen), pop. (1919), 439,000; (Dortmund), pop. (1919), 295,000; (Barmen), pop. (1919), 156,000; (Elberfeld), pop. (1919), 157,000; (Crefeld), pop. (1919), 125,000; (Aachen), pop. (1919), 146,000.

Berlin, from which it is only about 90 miles distant by rail. Like many if not most of the towns east of the Elbe, it has a name of Slavonic origin. It was a place of some importance as early as 830, but had a predecessor in Julin, an extinct town near the site of the later Wollin. This town throughout its existence was purely Slavonic, and it is noteworthy that it was situated on the outlet of the Oder, the Dievenow, directed towards the Slavonic east. It was totally destroyed by the Danes in 1177, and since then Stettin has been the principal port of the Oder, but its outport, Swinemunde, on the island of Usedom, lies on a channel directed westwards. Here are the Vulcan shipbuilding yards, cement works, breweries, and sugar factories. Kiel 1 lies on the left bank of a "förden" or drowned estuary, and dates from the tenth century. In the fifteenth century it joined the Hanseatic League, and was annexed to Russia in 1866. The Imperial authorities, then, spent huge sums of money upon the development here of a great naval arsenal, and added to the importance of the port by the construction of the Kaiser Wilhelm or Kiel Canal, which terminates at Holtenau just north of Kiel. The canal, begun in 1887, was opened in 1895. Sixty-one miles in length, it was  $29\frac{1}{9}$  feet deep, with a bottom width of 70 feet and a surface width of 215 feet; from 1909 until 1914 extension works resulted in a greater depth of 36 feet and a greater surface width of 331 feet. Navigation is continuous day and night, and occupies about nine hours. By the Treaty of Versailles it was decided that the canal and its approaches should be open to the warships and merchant ships of all countries at peace with Germany, thus making the canal an international waterway.

<sup>&</sup>lt;sup>1</sup> (Kiel), pop. (1919), 205,000.

#### 13. Free and Hanse Towns

Hamburg, Bremen, and Lübeck are free towns on the Prussian coast. With Stettin, Elbing, and Königsberg they form the chief seaports of Germany. Each of the three free-towns includes a considerable rural area.<sup>1</sup>

Beyond all comparison the most favoured under modern conditions, both in respect of natural advantages and the artificial advantages that are inevitably made to reinforce those due to nature, is Humburg,2 including the Prussian port of Altona, these two forming in reality one seaport. Like London and Antwerp it is situated at the head of a long and deep estuary, enabling large vessels to penetrate far into the heart of the country. With the growth in the size of vessels the depth of this estuary has been artificially increased. With the interior Hamburg communicates by means of an admirable system of waterways. The Elbe itself, with its tributary the Moldau, forms a single natural waterway to Budejovice (Budweis), near the southern angle of Bohemia, steam navigation beginning on this line as high up as Prague. By means of the Havel and Spree boats of nearly 5 feet draught can reach Berlin even at low water, only three locks being necessary to maintain this communication one at Spandau and two at or near Rathenow. So important is this connection that all the traffic between Berlin and Hamburg except tea and fine goods is said to

<sup>&</sup>lt;sup>1</sup> The area, seaport and rural population in 1919 were: Hamburg, 168 sq. m., 986,000 and 64,000; Bremen, 99 sq. m., 270,000 and 41,000; Lübeck, 115 sq. m., 114,000 and 7000.

<sup>&</sup>lt;sup>2</sup> (Hamburg), pop. (beginning of nineteenth century), 100,000; (1850), 150,000; (1871), 239,100; (1880), 289,900; (1890), 329,900; (1919), 986,000.

<sup>&</sup>lt;sup>3</sup> (Altona), pop. (1803), 23,000; (1871), 74,100; (1880), 91,000; (1890), 143,200; (1919), 169,000.

HAMBURG.

take the water route. Other waterways connect the Elbe with the navigable rivers of the east, Berlin, as already stated (p. 478), being connected with the coalmining region of upper Silesia by waterways accommodating vessels of 400 tons. The railway connections are of corresponding importance. Hamburg is connected through Berlin, by a remarkably direct double line of railway, with Breslau and the coalfield of upper Silesia, as well as the neighbouring parts of Bohemia and Poland. The disadvantages of the Baltic for communication with the ocean arising from the fact that, before the construction of the Kaiser Wilhelm Canal the peninsula of Jutland had to be rounded, as well as from the fact that the ports of that sea are closed for a longer or shorter period by ice, obviously tend to direct a much larger proportion of the traffic of eastern Germany towards Hamburg (whose outport of Cuxhaven at the mouth of the Elbe is always open) than would otherwise be the case. The general result is that Hamburg comes to be the chief oceanic port for Germany and Central Europe, with the exception of certain areas within a limited radius of certain Baltic ports, as well as for certain parts of the countries bordering on the regions of Germany belonging to the domain of Hamburg. But from the consideration of these facts it is evident that the importance of Hamburg depends on the importance of the trade with the west—with the North Sea and the Atlantic. in earlier times, when the short voyages to the islands and opposite shores of the Baltic were relatively of more importance than at present, Hamburg did not hold the rank among German seaports that it does now.

Hamburg was founded by Charlemagne about 810, and the facts pointed out by Hahn leave no doubt that the precise site was determined by the conveniences here offered for crossing the Elbe. No crossing-place can be found lower down, and owing to the marshy character of the banks, especially the left bank, there is no other crossing for 25 miles up (just below Lauenburg north of Lüneburg). The crossing by bridges is facilitated at Hamburg by the fact that the river is broken up into narrow channels by islands. The north bank of the Elbe was preferred because the Norder-Elbe formed the better waterway, because the expansion known as the Alster afforded a good winter harbour, and because a spur of firm geest between the Alster and the marshes of the Elbe formed a good site for building. The advantages of the site were clearly shown by the fact that between the time of its foundation and the year 1106 the town rose seven times from its ashes. In the Middle Ages its trade with England, Norway, and the Low Countries was important, but it had to await the development of trans-Atlantic commerce before enjoying the full measure of its natural advantages.

The Alster has been dammed to make two lakes which ornament the city; the Bille and the Elbe channels have been developed into a maze of basins. Since Hamburg joined the German Customs Union in 1882 a portion of the harbour is reserved as a free port; here are the shipbuilding yards. The territory of Hamburg includes the outport of Cuxhaven, acquired so long ago as 1393.

All along Bremen 1 has been the chief rival of Hamburg, and in this case geographical considerations alone are not sufficient to account for its continuous predominance on the Weser. It stands, it is true, at a good crossing-place, but there are other convenient

¹ (Bremen), pop. (1871), 82,800; (1880), 112,500; (1890), 125,700; (1919), 270,000.

crossing-places lower down with greater natural conveniences for sea-going ships. At nearly all periods of its history Bremen has been dependent upon outports, such as Vegesack at the head of the estuary, and Bremerhaven, which was founded in 1827 on land acquired by Bremen from Hanover, at the head of the wide funnel formed by the expansion of the estuary seawards, where it has adjacent to it on the south the Prussian rival of Geestemünde. Recently extensive works have been carried out with the view of making Bremen itself accessible to large sea-going vessels, and when these works are completed Bremen will undoubtedly become a much keener competitor for much of the trade now belonging to Hamburg.

Bremen joined the Customs Union in 1888, but reserved large basins north of the town as a free port. Bremen is distinguished from Hamburg by the greater degree in which the port is used by the largest vessels afloat. Both ports rely extensively upon the North Atlantic trade.

Lübeck <sup>1</sup> is situated in the angle between the Schleswig-Holstein-Jutland peninsula and the southern shore of the Baltic, and enjoys the same advantages for trade between western Germany and the Baltic as Hamburg does for that between eastern Germany and the ocean, and hence in the days when the Baltic trade was the most important, Lübeck held the first place among German seaports. Since the end of the fourteenth century it has had a waterway <sup>2</sup> to the crossing of the Elbe at Lauenburg, which in the days of the Hanseatic League gave to Lüneburg a consequence that it has long

<sup>&</sup>lt;sup>1</sup> (Lübeck), pop. (1871), 39,700; (1880), 51,100; (1890), 63,600; (1919), 114,000.

 $<sup>^2</sup>$  The Stecknitz canal, originally constructed by Lübeck merchants in 1390-98.  $\,$   $\Lambda$  new Elbe-Trave canal was opened in 1900.

lost, but of which there are interesting relics in its town hall, its ancient merchant house, and other antique edifices.



LÜBECK: THE RATHHAUS.

Lübeck lies on the Trave, which has been canalised to a depth of 28 feet, 10 miles from the mouth, at which lies the outport Travemunde.

## 14. Saxony

Saxony is the land of the middle Elbe, separated by a political accident into the Prussian province of Saxony with a capital at Magdeburg in the north, and a republic, before 1919 a kingdom, of Saxony flanking the Bohemian Ore Mountains. The lowland portions of Saxony, especially where the Elbe floods have fertilised the plains, are productive of wheat and sugar beet, and the upland portions to the south are more dependent upon minerals and manufactures. Within the southern portion of the province, which centres on Halle ("salt"), are copper mines at Mansfeld, salt and potash works at Stassfurt and in the Saale ("salt") valley.

Immediately below Leipzig a change in the course of the Elster directs an important road towards Halle, which probably on this account has become the most important town on the Saale. It is mentioned as Burg Halla in 806, but the first settlement here, that of salt miners, still known locally as Halloren, is certainly of much earlier date, the name Hall or Halle, so frequent at salt mines in Germany, being regarded by many as of Celtic origin. Halle belonged to the archbishopric of Magdeburg from the foundation of that see till the time of the incorporation of its territories with the dominions of the house of Brandenburg. Since 1694 it has been the seat of a university.

Two causes have combined to make the region now forming the republic <sup>2</sup> of Saxony the seat of numerous considerable towns from an early date—the character of the surface and the wealth of its mineral deposits. The

<sup>&</sup>lt;sup>1</sup> (Halle), pop. (1861), 43,000; (1880), 71,500; (1890), 101,400; (1919), 182,000.

<sup>&</sup>lt;sup>2</sup> (Republic), area, 5789 sq. miles; pop. (1919), 4,663,000.

DRESDEN.

country is a plateau sloping north-westwards from the Erzgebirge, and deeply furrowed by river valleys that form in the higher parts of the country almost the sole means of communication. The bends and junctions of these valleys naturally become the sites of towns, which are the more important the more populous the region is as a whole. The mining industries (silver, lead, copper, tin, iron) gave rise to a large population at an early date, and it is to be noted that a mining population is necessarily dependent on food supplies from other regions, especially where, as is so often the case, the mines are situated in districts not well adapted for agriculture. Agricultural villages may be almost wholly self-contained, but not so those engaged in mining. Towns thus arise as centres of trade for the mining population. But the mines also stimulated manufacturing industries, even before coal came to be used in manufactures, and such industries have been developed still further since the coal and lignite beds of the country have supplied fuel for steam-engines. Additional power has been obtained for many years from the upland rivers.

In relation to this water-power and the coalfields of Chemnitz, Zwickau, and Ölsnitz, the republic has become one of the most important textile areas in Europe; the situation of the factories on the rainy side of a mountain ridge recalls the location of the factories of Lancashire. The mineral sequence, copper, lead, silver, is characteristic of the intrusion of lava from ancient mountain masses, here the Harz and the Ore Mountains, into sedimentary deposits.

Dresden,<sup>1</sup> the capital of the kingdom, owes its importance chiefly to its charming situation on the Elbe, which

 $<sup>^1</sup>$  (Dresden), pop. (1849), 94,100 ; (1871), 177,100 ; (1880), 220,800 ; (1890), 276,500 ; (1919), 588,000.

made it the object of princely and royal favour, and still causes it to be a favourite residential town for people of various nationalities, including a great many English and Americans. It was still a Sorb colony in 1206, but was made the residence of the Albertine branch of the house of Saxony soon after the division of the Saxon territories in 1485. It is noted chiefly for its art collections in the curious rococo building known as the Zwinger, and its historical museum and its collection of porcelain and earthenware (the largest of its kind in Europe) in the Museum Johanneum. In addition to these collections a fine range of antiquities is housed in the Museum Albertinum; other treasure houses are the Körner, Schilling, and the municipal museums. The opera-house and national theatre, the technical college and other institutions combine to make the city an educational centre especially in the domains of music and art. The royal porcelain factory producing the so-called Dresden china was formerly carried on in a castle in Meissen, lower down the river, and is now carried on in the immediate neighbourhood of that town, where the art of making fine porcelain was discovered in Europe (by Bötticher in 1705), and near which deposits of kaolin are found.

The chief mining and manufacturing towns in the valleys of Saxony where these valleys are still deep and narrow are Freiberg, Chemnitz, and Zwickau. Freiberg has been noted for its silver-lead and other mines since its foundation in 1175, and is the seat of the most celebrated mining academy in Germany (founded in 1765) as well as of various manufactures. Of the other two, Chemnitz, which is situated at the most marked

<sup>&</sup>lt;sup>1</sup> (Chemnitz), pop. (1849), 31,000; (1871), 68,200; (1880), 95,100; (1890), 139,000; (1919), 304,000.

convergence of valleys, and now, like Zwickav, has the advantage of a coal-field, has always been the more important, and has been noted for its textile and other industries for at least five hundred years. Many smaller towns carry on similar industries, which are still in this region largely pursued domestically.

But the most important of all the commercial towns



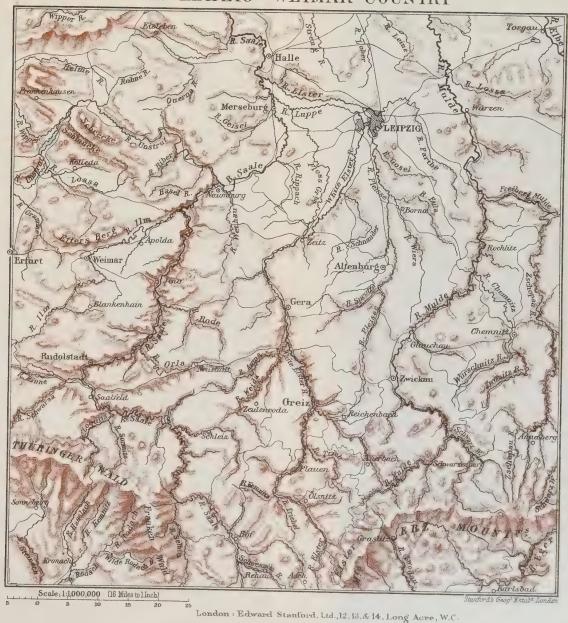
LEIPZIG

of Saxony, the most important indeed in south Germany, Leipzig,<sup>2</sup> is situated in the midst of the plains in the north-west of the country. With navigable rivers at no great distance both on the east and the west, Leipzig, though enjoying no such advantage, has been a great commercial centre from a very remote period, and the

¹ (Zwickau), pop. (1849), 12,700; (1871), 27,800; (1880), 35,000; (1919), 70,000.

<sup>&</sup>lt;sup>2</sup> (Leipzig), pop. (1849), 62,400; (1871), 106,900; (1880), 149,100; (1890), 295,000; (1919), 604,000.

# THE LEIPZIG - WEIMAR COUNTRY





character of the country in its neighbourhood goes far to explain how it has become so. Though for many miles round the surface is not accentuated in any marked degree, and the roads sometimes leave the valleys entirely, yet the general direction of the rivers, which is also the general slope of the ground, indicates the general direction naturally followed by the roads. Hence Leipzig, which lies at the point of convergence of two valleys—those of the Elster and the Pleisse—lies also at the point of convergence of roads either following or running more or less parallel to those valleys, both of which lead far into the higher country to the south. The Elster valley leads directly by Zeitz, Gera, Greiz, Plauen, and Ölsnitz to the south-western angle of the kingdom. The Pleisse, though much shorter, is hardly less important as leading by Altenburg towards Zwickau. The importance of both these natural features is now even more clearly shown than ever by the fact that all their windings are now followed by railways, the line to Zwickau being a double one. This convergence would in itself tend to give rise to a town at the point where Leipzig is situated, and the fact of there being only one river to cross instead of two after the junction, makes the site all the more important. But in addition to that, the valleys of several other streams which do not converge upon Leipzig point towards that town for a considerable part of their course, so that the roads whose direction is to a large extent governed by those valleys are naturally continued in the same direction in the neighbourhood of Leipzig even when the rivers change their course. This is notably the case with a large part of the valley of the Freiberger Mulde, and with that part of the valley of the Saale

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<sup>&</sup>lt;sup>1</sup> (Plauen), pop. (1871), 23,400; (1880), 35,100; (1890), 47,000; (1919), 105,000.

which continues the general direction of the Ilm from Weimar When we take into consideration the minor valleys that open into those mentioned, it is obvious that these circumstances tend to make Leipzig a point of convergence for the greater part of the kingdom of Saxony and a large part of Thuringia. A town that had these advantages, naturally enough became also a great focus also for the more distant commerce connected with this region. The town was founded shortly before 900. Mention of it as a town is found in a document of the year 1015. From an unknown date (certainly before 1156) Leipzig has been the seat of two great annual fairs held at Easter and Michaelmas, and a third held at the beginning of the year was founded in 1458. Notwithstanding the changed conditions introduced by railways and telegraphs, these fairs are still continued, though they are gradually losing their importance. Faced with a decline towards a mere market for books and furs the fair authorities, who are independent of the municipality, changed the fair in 1897 from a commodity to a sample fair. For two decades the fair, held twice a year in spring and autumn, was a convenient meeting-place for agents of the industrial area of Saxony and Thuringia with purchasers from the rest of Europe. Gradually the scope of the fair has been extended to include samples of all German manufactures as well as samples of foreign goods for which there is a sale in the neighbourhood. The fair has become international in character, with special attention to imports as well as exports. Since 1409 Leipzig has been the seat of a university, now the rival of that of Berlin in the celebrity of its professors and the number of its students. The buildings were reconstructed between 1893 and 1897. Since about the middle of the seventeenth century Leipzig has been the chief centre of the book trade in succession to Frankfurt-on-the-Main.

# 15. Thuringia

Thuringia became in 1919 a united republic. Seven of the former German states—Saxe-Weimar-Eisenach, Saxe-Meiningen, Gotha, Saxe-Altenburg, Reuss, Schwarzburg-Rudolstadt, Schwarzburg-Sonder-hausen—gave up their independence and became a political as well as a geographical unit based on the Thuringian Forest. The unity, however, is not politically complete, for Coburg joined Bavaria. The Thuringian Road runs across the state from Eisenach through Weimar and Jena.

In Thuringia the conditions favouring the growth of towns have been similar to those in Saxony, except that the mining industries are not so important. There are no large towns here, but attention may be drawn to four of these, Eisenach, Gotha, Erfurt,2 and Weimar, the capital of the new state, lying near the parallel of 51°, the first of them at the north-west end of the Thuringian Forest. Here the minor features direct the main road east and west, and the four towns lie at points on that road where openings lead in other directions, Erfurt, the largest and most progressive of the four, being situated where the road in question is crossed by the north-south valley of the Gera leading up to the chief crossing of the central part of the Thuringian range, a route now followed to the south base of the range (Zella) by a double line of railway, which pierces

<sup>&</sup>lt;sup>1</sup> (Republic), area, 4542 sq. miles; pop. (1919), 1,508,000.

<sup>&</sup>lt;sup>2</sup> (Erfurt), pop. (1816), 18,000; (1861), 37,000; (1880), 53,300; (1890), 72,400; (1919), 130,000. Politically it is in Prussian Saxony.

the mountains in the Brandleite tunnel nearly two miles long.

#### 16. Bavaria

Bavaria <sup>1</sup> was declared a republic in 1918; it includes Swabia, Franconia, and the detached Palatinate, and is the eastern portion of the uplands of south Germany, being separated on the south from Austria by the Noric Alps, and on the east from Bohemia by the Bohemian Forest. South is a continuation of the plateau of Switzerland, crossed by the Lech, Isar, and Inn; next comes the Danube valley, between Ulm and Passau; north of the river in the east, the upland between the Franconian Jura and the Bohemian Forest drains south by the Naab and the Altmuhl, and in the west beyond the Franconian Jura is the valley of the Main.

Modern Bavaria was created by the Congress of Vienna, and except for a small adjustment of boundaries in 1866 and the inclusion of Coburg in 1919, the state has remained as created. Bavaria was an ally of Austria against Prussia in the war of 1866, and five years after defeat joined the victor, Prussia, in the German Empire of 1871.

West of the Rhine and north of Alsace-Lorraine lies the detached portion of the state, the Palatinate, which consists of the northern extension of the Vosges highlands known as the *Haardt*, and still answers to that name, which is merely a variation in spelling of an Old High German word for "forest." Though of only moderate elevation, its highest summit the Kalmit no more than 2240 feet in height, it comprises an irregular quadrangle of about 250 square miles in extent, between

<sup>&</sup>lt;sup>1</sup> (Republic), area, 29,506 sq. miles; pop. (1919), 7,140,000.

<sup>&</sup>lt;sup>2</sup> The term is not confined to mountain forests. It also survives in forest names in the Rhine valley, as the Haardt between Heidelberg and Spires, and the Lusshardt to the south-east of Spires.

the railways connecting Landau and Zweibrücken on the south, and Neustadt and Kaiserslautern on the north, and between the Rhine valley on the east, and the road connecting Kaiserslautern with Pirmasens on the west, in which the sparse population lives in an area almost wholly covered with forests of beech, oak, fir, and pine.

Of the German towns in the basin of the Danube those which first rose to importance were Regensburg, Augsburg, and Ulm, all of them at a time when intercourse and commerce by way of the Danube and across the passes of the Alps were relatively more important than they are now.

Regensburg or Ratisbon (both of which names date in some form or other from the Middle Ages, though the latter has now dropped out of use in Germany) was the first of these to attain celebrity. It dates back to Roman times, and this may be taken to explain the fact that it lies on the right or south bank of the Danube. If it had owed its origin and early importance to its German relations it would probably have stood on the left bank. Its Roman name was Castra Regina, but the identity of the latter part of the name with the Latin for "queen" is probably purely accidental, the name Regina being generally thought to be of the same origin as the first part of the name Regensburg, and derived from the name of the river, Regen, which flows from the north into the Danube opposite the town. What first gave this town importance, in addition to its position near the northernmost point of the great bend of the Danube, is the fact that it lies nearly due north of the point where the Inn emerges from the Alps on the Bavarian plain. It is by the valley of the Inn that the Brenner Pass is reached, and this pass, it should be noted, is the direct means of communication not merely with the

eastern portion of the northern plain of Italy, but also with the whole of the peninsular portion of that country. This accordingly would give importance to the site not merely in Roman times, but even more during the period when more or less of Italy was included in the German empire. In the eleventh and twelfth centuries Ratisbon was often the seat of the German emperors, who often followed the Brenner Pass in their expeditions into Italy. It was formerly the seat of a Benedictine Abbey (founded 652), whose abbot exercised princely jurisdiction. Its bishopric was founded in 739, and its cathedral was begun in 1275. The bridge connecting it with the left bank of the Rhine dates from as far back as 1135-46, and in its streets it possesses numerous relics of its former grandeur. Its decline dated from the fifteenth century, when the advance of the Turks helped to destroy the trade with Constantinople by way of the Danube. Its modern importance arises from its position at the head of deep-water traffic on the Danube, which makes it a considerable river-port, with imports, for example, of petroleum from Rumania.

Augsburg 1 dates from Roman times and still has a trace of its Roman name Augusta Vindelicorum, which was founded on the site of an older settlement in 13 B.C. The right bank of the Danube to the north of this city consists mainly of moorland (the east end of the Donauried), and hence affords no suitable site for a town. On the other hand the end of the narrow wedge-shaped terrace between the Wertach and the Lech offered at least an excellent position for defence, and this circumstance no doubt determined the original choice of the site. Its commercial prosperity dates, however, only from

<sup>1 (</sup>Augsburg), pop. (1840), 37,000; (1871), 51,200; (1880), 61,400; (1890), 76,600; (1919), 155,000.

the fourteenth century, but during that and the following century it was a great centre of German, Italian, and Levantine trade, and was the money-market of Europe. It reached the height of its prosperity in the beginning of the sixteenth century, but began to decline after the discovery of the seaway to India had come to tell heavily on Italian commerce. The prosperity which Augsburg then enjoyed is largely attributed to the energy and ability of a few families, the Fugger, the Welser, and the Detten, but these were certainly favoured by the geographical conditions of the time. The Seefeld Pass, to the north-west of Innsbruck, was now used as a means of approach to the Brenner Pass, and Augsburg was thus well situated as a place of convergence and divergence of the trans-Alpine commerce by that pass and the more westerly passes leading to the Lake of Constance. From an early date, moreover, the rapid Lech has been important for the water-power which it afforded, and helped to make of Augsburg an industrial city, which it still continues to be, being noted above all for its cottons and woollens. Among the witnesses of former glory which it still retains are the town-hall of 1615-20 with the Golden Hall, the house of the Fuggers, adorned on the outside with frescoes, the Perlach tower, and the historical hotel of the Drei Mohren.

Munich 1 (München), the present capital of Bavaria, situated on the Isar, at the height of 1700 feet, in the middle of an extensive plain, to a large extent covered by forests in the south and moorland (the Dachauer Moos and the Erdinger Moos) in the north, is in the main a modern town. It is mentioned indeed under the form Munichen in the beginning of the twelfth

 $<sup>^1</sup>$  (Munich), pop. (1801), 40,000; (1818), 53,000; (1871), 169,700; (1880), 230,000; (1890), 349,000; (1919), 631,000.

century, and a princely residence, now the Alt-Hof, was built here in 1253, but it is only since the close of the eighteenth century that it has acquired its distinctive characteristics, that is to say, has become renowned for its public buildings and gardens, its art collections, and artistic industries, such as working in bronze, gold, and



MUNICH: THE CITY HALL.

silver, glass-painting, porcelain manufacture, etc. Of its art collections the most celebrated are the Glyptothek, the Alte Pinakothek, with its pictures of the High and Low German schools, its Rubens gallery, and its collections of copperplate engravings and vases, and the Neue Pinakothek with its pictures of the nineteenth century and antiquarian collection. Its university was transferred here from Landshut in 1826. It also possesses an academy of arts and a well-organised polytechnical institute.

The importance of the city is largely due to the rail-way system for which Munich became the natural centre between Paris and Vienna, and between Berlin and Rome. Brewing is the chief industry, and artistic craftsmanship in engraving, photogravure, stained glass, and porcelain is the dominant note in the products of this modern city.

Of the other towns of the Rhine basin the only one that need be specially noticed is Nürnberg, or as it has long been known in England, Nuremberg, which seems at the first glance to occupy no very favoured situation, but yet has maintained its reputation for centuries as an industrial and commercial centre. An examination of a large-scale physical map shows that its importance is not without geographical foundation. The country round is far from fertile, and is marked by no prominent physical features. Still the nature of the ground makes it a natural point of convergence of roads from the north, south, and east, and this fact made it worth while to make roads (over comparatively easy ground) in other directions also. It lies in a slight hollow near the place where the Pegnitz flowing from the east joins the north and south valley traversed by the Rednitz and the Regnitz, the last mentioned being the river formed by the union of the other two streams. This hollow lies. moreover, on the nearly straight line leading from Frankfurt to Ratisbon and continued below Ratisbon by the course of the Danube, a circumstance that tended powerfully to the development of traffic from and to the north-west and the south-east. All this traffic could not but impart a certain stimulus to the development of manufacturing industry, all the more since the soil afforded so little encouragement to agriculture. Artificial

<sup>&</sup>lt;sup>1</sup> (Nürnberg), pop. (1840), 47,000; (1871), 83,200; (1880), 99,500; (1890), 142,600; (1919), 353,000.

encouragement was not wanting. Special privileges were granted to it in 1219 by the Emperor Frederick II.



NÜRNBERG: FRAUENKIRCHE.

expressly because it stood on the most sterile soil, but even without special privileges, and without the advantage of coal or iron, it still continues to flourish commercially and industrially, and its present importance is indicated by the fact that railways radiate from it—north to Bamberg on the Main, others westwards to crossings of the Rhine at Mainz and Germersheim, and others east to Bohemia and south to the Danube.

Electric developments have vitalised the town's industries, the chief of which are related to locally grown hops, and toys and other wooden ware.

Other Bavarian towns of note are Würzburg<sup>1</sup> and Fürth,<sup>2</sup> and also Ludwigshafen<sup>3</sup> and Kaiserslautern in the Palatinate. Würzburg, on the Main, has manufactures of delicate instruments in the centre of vine, hop, and potato growing district; Fürth shares with its neighbour Nuremberg in hop, tobacco, toy, and glass industries. Ludwigshafen is a Rhine port with important chemical products and a strategic situation in relation to railways west to the Saar basin and Lorraine; it forms in reality one town with Mannheim. Kaiserslautern is a textile centre west of the Haardt.

# 17. Württemberg

The republic <sup>4</sup> of Württemberg, formerly a kingdom, dates from 1918. It extends from Lake Constance in the upper Rhine valley northwards across the Swabian Jura to the valley of the Neckar; west across the Black Forest is Baden; east lies Bavaria. In 1805, Duke Frederick, who was indebted to Napoleon for his dukedom, took the rank of king and was confirmed in it in 1815. Württemberg sided with Austria in 1866, but joined the German Empire in 1871.

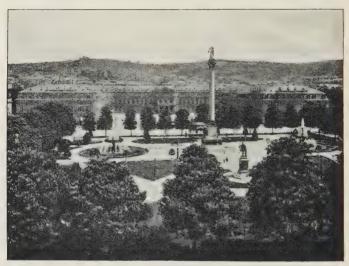
<sup>&</sup>lt;sup>1</sup> (Würzburg), pop. (1919), 87,000.

<sup>&</sup>lt;sup>2</sup> (Fürth), pop. (1919), 68,000.

<sup>&</sup>lt;sup>3</sup> (Ludwigshafen), pop. (1919), 91,000.

<sup>4 (</sup>Republic), 29,506 sq. miles; pop. (1919), 2,519,000.

Stuttgart, the capital, occupies an inconvenient site in the valley of the Neckar, and owes its importance to the caprice of the country's rulers. The industry of the Swabians has attracted to it a considerable book-publishing business and manufactures of chemicals, leather, and wooden ware. Apart from the former royal palaces and



STUTTGART.

the churches, most of the town is modern. Cannstadt, now a suburb, originated in Roman towns, and marks the spot where navigation of the Neckar formerly commenced. Heilbronn, down the valley, is the modern head of steam navigation.

Ulm was the next of the south German towns to rise to importance, and as the commercial and political position of Ratisbon is associated with the Brenner Pass,

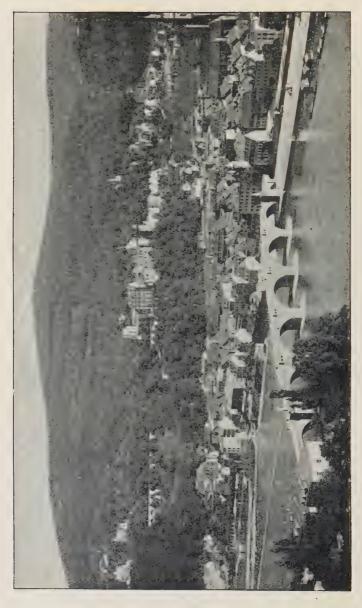
<sup>&</sup>lt;sup>1</sup> (Stuttgart), pop. (1919), 309,000.

so that of Ulm may be associated with those Alpine passes (chiefly the Septimer, Splügen, and Bernardino) that debouch in the north by the Rhine valley at the east end of the Lake of Constance. Ulm is situated nearly due north of that point, and in addition to that it enjoys the advantage of being at the head of the navigation of the Danube, and at the end of the route marked out by nature between the Rauhe Alb and the Albuch, connecting the Danube with the valley of the Neckar, and now traversed by a double line of railway. It was thus a natural crossing-place of east and west and north and south routes. It is mentioned under the form Hulma as possessing a royal palace as early as 854, and it possesses a minster begun as far back as 1377, though not completed in its present form till 1890. This is the largest Protestant church in the empire, and its tower rises to the height of about 530 feet. The strategical importance of Ulm has caused it to be erected into a fortress of the first class, the works embracing Neuulm on the right or Bavarian bank of the Danube.

# 18. Baden

In 1918 the Grand-duke of Baden abdicated, and Baden was proclaimed a republic. It lies between the Rhine and the Black Forest, in the south-eastern portion of the Rhine rift valley. The state has occupied its present area since 1813, and, like Württemberg and Bavaria, sided with Austria in 1866, but joined the German Empire in 1871. Karlsruhe, the capital, lies 6 miles from the Rhine, is a relatively unimportant

<sup>&</sup>lt;sup>1</sup> (Republic), 5819 sq. miles; pop. (1919), 2,209,000. <sup>2</sup> (Karlsruhe), pop. (1919), 136,000.



modern town, which has been outstripped by Mannheim,<sup>1</sup> at the confluence of the Neckar and the Rhine, the natural head of Rhine navigation, except in flood seasons.

Most of the river traffic, shared with Ludwigshafen in the Palatinate, consists in grain, coal, and petroleum brought up-stream, and in much smaller quantities timber and salt from the Neckar sent down-stream accompanied by many empty barges. It has manufactures in machinery, glass, earthenware, woollens, tobacco, and chemicals. Its older buildings belong to the period when it was the seat of the Electors Palatine; it became Bavarian and was transferred to Baden in 1802. It owes much to French refugees, who were also responsible for the cheap jewellery trade of Pforzheim,<sup>2</sup> an industrial town close to Karlsruhe.

Heidelberg, situated where the Neckar emerges from the mountains, was the most important town on that river till after the foundation of Mannheim. Originally a fief of the bishops of Worms, it became a town in the twelfth century, and in the following century capital of the Rhine Palatinate. About the same time the castle now so celebrated as a ruin was built in its original form on the hill known as the Königsstuhl (730 ft.), to the south-east of the town, where its university (refounded in 1803) was originally established in 1386 by the elector Ruprecht I. Farther south in more or less similar situations are Bruchsal, Durlach, Freiburg, and Lörrach. Freiburg, the most important of these towns, is situated in the recess of the Black Forest behind the Kaiserstuhl, at the mouth of a flat-bottomed valley a

<sup>&</sup>lt;sup>1</sup> (Mannheim), pop. (1812), 18,000; (1871), 39,600; (1880), 53,500; (1890), 79,100; (1895), 97,800; (1919), 230,000.

<sup>&</sup>lt;sup>2</sup> (Pforzheim), pop. (1919), 74,000.

<sup>&</sup>lt;sup>3</sup> (Freiburg), pop. (1871), 24,700; (1880), 36,400; (1890), 48,900; (1919), 88,000,

mile or more in width giving access to the mountains in various directions.

#### 19. Hesse

Hesse, since 1918 a republic, was formerly a German grand-duchy. It is divided by Prussian territory near Frankfort-on-the-Main into Upper Hesse, which lies north-east of the Taunus, and south Hesse, which extends west of the Rhine and occupies the northern portion of the rift valley. It is to be distinguished from Hesse-Nassau, a more extensive area to the north, which is a province of Prussia. The capital is Darmstadt,2 which lies about the point where, in coming northwards, roads begin to diverge freely eastwards, as well as to the west and north over the plain; and if this had been a fertile part of the plain there can be little doubt that a considerable town would have existed here or in the neighbourhood from an early date. But the plain here (east of the Rhine) is not fertile. It is still largely, if not mainly, covered with forest,3 and on the whole is the least populous part of the entire plain between the Taunus and the Sundgau. Hence Darmstadt was slow in developing, and owes its position as capital of a branch of the house of Hesse (since 1567) chiefly to the beauty of its situation. During recent times its growth has been accelerated through its having been made an important railway centre, the north to south lines from the great ports on the North Sea being here crossed by that from northern Bavaria to the Rhine.

Mainz,4 the largest town, lies opposite the mouth of

<sup>&</sup>lt;sup>1</sup> (Republic), 2968 sq. miles; pop. (1919), 1,291,600.

<sup>&</sup>lt;sup>2</sup> (Darmstadt), pop. (1816), 13,400; (1871), 33,500; (1880), 40,900; (1890), 56,400; (1919), 82,000.

<sup>&</sup>lt;sup>3</sup> To a large extent on a soil of nearly pure sand.

<sup>&</sup>lt;sup>4</sup> (Mainz), pop. (1816), 25,000; (1871), 53,300; (1880), 60,800; (1890), 72,100; (1919), 108,000.

the Main, and hence held an important position for Rhine traffic; recent developments have led to a relative decline in face of competition from Frankfort and Mannheim. It has manufactures of leather, furniture, railway rolling-stock, and a trade in wine, cereals, and timber. The Roman Moguntiacum, it became the seat of an archbishop in 747, and later archbishops were electors for four and a half centuries; the archbishopric was abolished in 1803. The red sandstone cathedral of St. Martin is a noble edifice in a somewhat uninteresting river-side factory town.

# 20. Small States of Central Germany

Brunswick, Anhalt, Lippe, Waldeck, Schaumburg-Lippe are five small republics situated on the south of the plain and encircled by parts of Prussia. The city of Brunswick, the capital of the former duchy, is a quaint old town on the Oker, and was formerly the capital of the westernmost quarter of the Hanseatic League, from which period dates the cloth merchants' hall. The cathedral contains the tomb of its founder, Henry the Lion, whose grandson was the first duke.

# 21. Oldenburg

Oldenburg <sup>7</sup> became a republic in 1918, when the grand-duke abdicated. In its early history it had relations with Denmark, but oriented to Germany definitely

- <sup>1</sup> (Brunswick), 1425 sq. miles; pop. (1919), 500,000.
- <sup>1</sup> (Anhalt), 888 sq. miles; pop. (1919), 331,000. <sup>2</sup> (Lippe), 469 sq. miles; pop. (1919), 154,000.
- 4 (Waldeck), 401 sq. miles; pop. (1919), 56,000.
- <sup>5</sup> (Schaumburg-Lippe), 130 sq. miles; pop. (1919), 46,000.
- <sup>6</sup> (Brunswick), pop. (1919), 140,000.
- <sup>7</sup> (Republic), 2482 sq. miles; pop. (1919), 518,000.

in 1871. Besides the area of lowland south of Jade Bay and west of the Weser estuary, the republic includes the district of Birkenfeld, north-east of Saarbrücken, and the district of Lübeck, on the west side of the bay of Lübeck. *Oldenburg*, the capital, is a small agricultural centre on the Hunte.

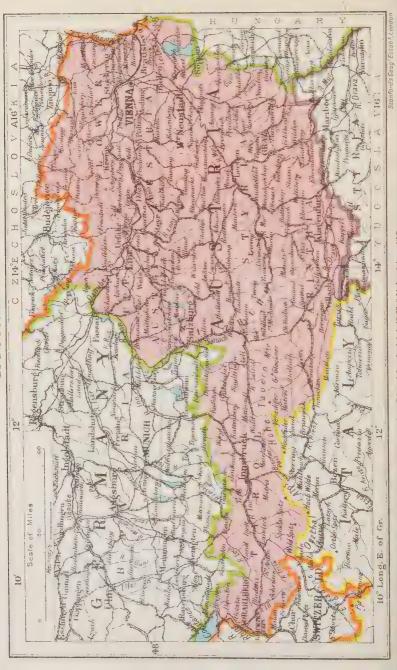
# 22. The Mecklenburgs

Mecklenburg-Schwerin and Mecklenburg-Strelitz, formerly grand-duchies, have been republics since 1918. Mecklenburg was of Slav (Wendish) origin with princes of the Wends as rulers; in 1701 by a family compact the duchy was divided. It is a section of Baltic highland, a typical morainic lakeland, east of the Elbe, with a Baltic coast east of Lübeck. Relatively infertile with a harsh climate, the area is backward both in agriculture and industries. Rostock, the largest town, with an outport at Warnennünde, and Wismar were suitable and prominent ports for the Hanseatic League, and retain a considerable trade in grain, linen, and cattle. Rostock has shipbuilding, and lies with Warnennünde on the short route from Berlin to Copenhagen.

 <sup>(</sup>Mecklenburg-Schwerin), 5068 sq. miles; pop. (1919), 657,000.
 (Mecklenburg-Strelitz)), 1131 sq. miles; pop. (1919), 156,000.

<sup>&</sup>lt;sup>8</sup> (Rostock), pop. (1919), 69,000.





#### CHAPTER XII

#### AUSTRIA

#### 1. Extent and General Relief of the Land

AUSTRIA has been reduced to an Alpine land, without any definitely geographical reasons for its continued existence in its present shape. It comprises two rectangular areas—a narrow rectangle in the west about 170 miles long by 40 broad, and an almost square section in the east about 180 miles from east to west by 150 miles from north to south; the total area is 32,000 square miles. The southern boundary along the Ötzthal Alps, the Carnic Alps, and the Karawanken has definite features; east of Switzerland except near the source of the Drave it separates the Danubian rivers from those which drain towards the Adriatic, it crosses a linguistic boundary zone to the south of the German-speaking Austrians. The boundaries with Switzerland have been long established, but semi-independent Liechtenstein and the small province of Vorarlberg belong to the valley of the upper Rhine and form an isolated area reached from Vienna only through the Arlberg tunnel; the boundary even touches the Rhine. The line which separates Austria from Bavaria is a mere convention; south of Bayaria its sinuosities bear little relation to the mountains or rivers—it frequently crosses the headstreams of tributaries of the Danube; east of Bavaria it follows the Salzach and the lower Inn. The line between Austria and Czecho-Slovakia has been drawn without regard to the physical configuration except in the east, where it follows the Morava (March) to the Danube. The frontier on the east of Austria adjoining Hungary is not the former political boundary but a new line closer to the edge of the lowland of the little Alföld or Hungarian plain. On the whole the boundary serves its main purpose, i.e. to include within one state the German-speaking elements of the old Dual Monarchy.

Apart from the basin of Vienna which surrounds the capital and the narrow gorge of the Danube there is no lowland; at least two-thirds of the area exceeds 3300 feet (1000 metres) in elevation. There are three eastwest lines of comparatively low ground; the Danube valley in the north, the Drave valley in the south, and an incomplete middle route made up of the east-west sections of the Inn, Salzach, and Enns; this middle line follows the valleys which lie parallel with the Ötzthal Alps, the Hohe, and Nieder Tauern. A smaller similar valley-way lies along the valleys of the Mur and Leitha. These four lines of least resistance emphasise the difficulties of communication from north to south.

## 2. Rivers and Lakes

Practically the whole of Austria belongs to the basin of the Danube. This great river, the largest in Europe in respect of its volume of water, enters Austria as a navigable stream at the gorge of Passau, where it is joined on the right by the Inn, and after receiving this tributary has a width of 765 feet. Till it leaves Austria proper its banks are pretty closely hemmed in by the

<sup>&</sup>lt;sup>1</sup> Length 1780 miles.

Alps, and the river passes through a succession of narrow defiles. Between Linz and Vienna it is said to rival, if not to surpass, the Rhine below Bingen as regards the picturesqueness of the scenery on its banks, and more particularly on the south, where it skirts a succession of smiling valleys overlooked by lofty mountains clad with sombre forests or mantles of snow and ice. In this part of its course a navigable channel is mostly maintained by means of stone embankments as far as Grein. During part of this course, between Grein and Dürrenstein, it passes through a narrow gorge obstructed by rocks and islets. At Grein, however, the most dangerous of these rocks have been removed by blasting, and a navigable channel 260 feet wide, with a depth of 3 metres (nearly 10 feet) below the normal level of the surface, has been created. Below Dürrenstein the river spreads freely over a plain of great fertility. Soon after receiving the Morava on the left, its bed is again constricted at Bratislava (Pressburg, Pozsony), where it passes through what is called the Theben Gorge between the Alps and Carpathians. It then breaks up into a number of branches, forming a labyrinth of islands known as Schütten, covering an area of about 600 square miles, terminating at Komarno (Komorn). On this braided course across the little Alföld, between Pressburg and Gönyö (about 12 miles west of Komarno), works have been carried out since 1885 for the maintenance of the navigable channel. Soon after emerging from the upper Hungarian plain, it turns suddenly southwards, between the Bakony Forest and the outliers of the Carpathians through the gorge of Vács (Waitzen), and thence flows onwards in the same direction as a broad and, considering its volume, a rapid stream over a wide plain, till it is deflected to the west, where it receives the Drave on

the right. Here the course is naturally braided, and regulating works have been carried out south of Buda Pest. At Belgrade, where the river receives its other great tributary on the right bank, the Save, its channel is obstructed by rocks, and for 60 miles downstream the river passes through a series of difficult gorges, which form a sort of connecting link between the Carpathian Mountains and the Serbian highlands. The first of these defiles stretches from Golubac almost to Dobra, its upper section being composed of Jurassic limestone walls with numerous caverns, while in the lower portion the steep banks and rocky shoals in the stream chiefly consist of crystalline schists and granite. At Drenkova begins the second or Greben defile, the Upper Klisura, after which follow the rapids of Izlas, the Upper or Lesser Iron Gate (Gornje Demir Kapu), formed by the reefs of Tachtalia and Izlas, and heretofore often confounded with the true Iron Gate below Orsova. There soon succeeds the magnificent scenery of the third and grandest gorge —the Kasan defile, or Lower Klisura. Lastly, below Varciorova we come upon the dangerous reefs of the Iron Gate properly so called.

A rocky ledge about a mile in breadth, with tooth-like points projecting above the surface, lies athwart the stream, which, when the river is low, forms a fearful cataract of tumultuous seething waters. As far as the flourishing Rumanian town of Turnu Severin the wooded hills keep close to both banks, after which they become rounder and lower, gradually receding farther and farther from the river.

Before the introduction of steam-navigation in 1846, few vessels ever ventured to cross this barrier, and even after steamboats came to be used, the Klisura was navigable only for vessels drawing no more than 6 feet, and

that only from March to November. By works begun in 1890, and completed in September 1896, a navigable channel of about 10 feet (3 metres) has been established throughout this defile.

On the whole stretch between the Iron Gates and Gönyö a minimum depth of about  $6\frac{1}{2}$  feet is now maintained, and as this is the portion of the river on which the great bulk of the Danube navigation is carried on, the fleets of the steamship companies are composed of boats with a draught suitable to this depth. Between Gönyö and Bratislava the conditions of the river are steadily being improved, and it is hoped that the same minimum depth will soon be effected and maintained on that portion. But the portion above Bratislava is considerably shallower at low water, on which account the river steamers have generally to lighten cargo, and often to the extent of half their burden in ascending above Bratislava. On this account it is strongly urged that a minimum depth of at least 6½ feet should be secured on the whole length of the Austrian Danube (to Passau).

Of the tributaries of the Danube the *Theiss* (Tisza) is navigable by steamers to Tokaj, though not generally navigated beyond Tisza-Füred (about the latitude of Debreczen), the Drave to the confluence of the Mur, the Save to Sisak (Sissek) at the confluence of the Kulpa. Steamers also navigate the Franzens Canal (connecting the Danube with the lower part of the Theiss), the Franz-Josefs Canal, a branch from the former leading to Novisad (Neusatz) on the Danube, and the Bega Canal connecting Temisioara (Temesvár) with the Theiss a few miles above the point where it joins the Danube. The other navigable tributaries of the Danube, the Morava, the Vág (Waag), the Garam (Gran), and the Inn, cannot be navigated by steamers, some by reason of their

shallowness, the Vág on account of the rapidity of current. Neither are steamers employed on any of the tributaries of the Theiss, the more important of which, however, are all navigable a considerable distance up. For the further development of the inland water-traffic of the Danube waterways it has been proposed to construct canals connecting the Danube with the Oder and Vistula, and with the Moldau-Elbe navigation 1—all projects which, if carried out on a sufficiently large scale, would obviously add enormously to the value of the waterways of central Europe generally, through the opportunity thereby afforded for the transmission of goods by this mode of carriage for enormous distances without break of bulk.

It has sometimes been surmised that the rocky gorge of the Iron Gates was once closed, and that the Danube burst its way through the pass. According to some authorities the great plains of Hungary between Belgrade and Budapest and Tokaj were once covered by the waters of an enormous fresh-water lake, which may have occupied an area at least half as large as the Adriatic Sea, if not even larger. If this was so, then the overflow of the water of the lake to the east may have gradually cut out the gorge of the Iron Gates, as indeed it is deepening it by degrees even now.

But there is another view of the case. The great plain of Hungary, through which the Danube and the Theiss flow from north to south, is almost entirely bordered by Miocene strata, which pass under the vast alluvial flats, and only here and there rise through the alluvium in a few island-like patches. If the flat-lying scarped Miocene tablelands once spread across and covered the entire plain, then their present scarped forms on the

<sup>&</sup>lt;sup>1</sup> See below under Bohemia.

borders of the plain are the result of denudation, by which the Miocene strata that once overspread the intermediate space have been gradually removed. If so, this was the manner in which it was done. In old times the Danube and its affluents flowed at a high level across the surface of this ancient plain, and began to cut out the gorge of the Iron Gates, and in proportion as it was deepened the sediment won from the Miocene strata was borne seawards, till at length, the gorge gradually being cut deeper, a vast area of the soft Miocene beds was worn away by the wandering Danube and Theiss to so low a level that the whole area from which they were removed was reduced to a vast lowland plain covered by the silt of these rivers, which even now cannot be easily restrained within what we call their legitimate channels.

It is not merely for the promotion of navigation that regulating works have been carried out on the Danubian rivers. The plains crossed by the larger rivers, and more particularly the tracts bordering on the Save and the Theiss, are very subject to inundations. In a large measure this is due to the obstructions in the bed of the main stream after it has passed Belgrade. An increase in the volume of water cannot be carried off with sufficient rapidity. A rise of 13 feet in the level of the Danube causes the Theiss to flow backwards as high as Szeged, 87 miles above its influx into the main stream. Szeged itself was in large part overwhelmed by an inundation in 1879. Efforts have been made to ward off such disasters by the erection of embankments. In the course of the Theiss, one of the most braided of European rivers, numerous cuts have been made to reduce the length of its windings, and the bed thus formed, about 300 miles shorter than the original bed, has been protected by embankments. But after all has been done, it is im-



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possible to guard completely against the risk of inundation, and it has even been asserted that the risk in certain parts has been increased by this system of cuts and embankments through the increase in the volume of water thus confined to the main bed of the river. It cannot be doubted that an inundation is thereby rendered liable to be all the more disastrous when it does occur, and it is believed by some that, though the embankments have undoubtedly afforded a local protection in different parts of the river's course, yet the country has not benefited on the whole by their construction.

One consequence of this liability to inundation is that the land on the banks of these rivers is extremely marshy. This is particularly the case with the country on the left bank of the lower course of the Theiss. That river there receives at right angles on its left bank two large and rapid affluents, the Maros and the Körös, and the force of their current is gradually driving the bed of the main river farther to the west. The tract left behind on the east may almost be described as one vast marsh, traversed in places by deserted channels of the river, sometimes exact facsimiles of the corresponding parts of the actual bed, except that they contain water with no current or no water at all. The prime cause of the inundations lies in the melting of the Alpine snows, and the ice on the rivers combined with the early summer rains. Thus a large volume of water suddenly flows from the Alps, and being dammed by the narrow rocky channel east of Belgrade holds back the waters of the Theiss.

The lakes of Austria are not numerous. The highland lakes of the Alps are all small. The Ferto or Neusiedler See in the extreme east of Austria is an exceedingly shallow lake, so shallow that it sometimes evaporates completely in very dry years, as it did in 1865. It is

then refilled by the waters of the Danube when the river rises sufficiently high to force back the sluggish stream of the Hánszág, which communicates with the Fertö through the Hánszág swamp.

# 3. Geology

In the south of Austria occurs a great region of crystalline rocks, that of the central Alps, which are flanked chiefly by Palæozoic and Secondary limestones on the north in the same way as they are farther to the west. In Austria, however, the Carboniferous and Triassic limestones are much more largely developed than in Switzerland.

The Tertiary belt between the crystalline rocks and the similar crystalline rocks of Bohemia is narrowest about midway between Linz and Vienna, and after that the Miocene deposits begin to expand on the east, first to the north and then both to the north and south. The northern branch ascends to the Carpathians (the Western Beskids) behind the Tatra, while the southern spreads out over all the last spurs of the Alps.

# 4. Climate and Vegetation

Two circumstances combine to give Austria a similar climate to south Germany—its more southerly situation, and its elevation. Austria lies to the north of the great east to west mountain barrier. The effect of this barrier is particularly apparent when we compare the temperatures of places situated to the north and south of the main chain of the Alps. Thus Salzburg, in lat.  $47^{\circ}$  6', has a mean July temperature of  $63\frac{1}{2}^{\circ}$  F., while that of Bozen (Bolzano) in Italy, scarcely more than a degree farther

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south, has the corresponding temperature just ten degrees higher. The lowest temperature reached on an average of years at the former station is 2° F., at the latter 18°.

The extremes of temperature are, however, greater in Austria than in Germany. While at such stations as Königsberg, Bromberg, and Breslau in the east of Germany, where the range of the thermometer is on the whole greatest, the difference between the mean temperatures of January and July is from  $37^{\circ}$  to  $37\frac{1}{2}^{\circ}$  F., at Vienna the corresponding difference is  $39^{\circ}$ .

Almost throughout Austria the amount of the rainfall is greatest in summer. The principal exception is in the south-west, where autumn rains begin to predominate in the valley of the Drave. There we begin to meet with the climatic conditions characteristic of the Mediterranean region. The highest annual rainfall occurs in the mountainous regions in the south-west (Carinthia), where it amounts to from 60 to 65 inches per annum.

On the subject of the vegetation of Austria little need be added here to what has been said elsewhere. The vegetation of the west has the same characteristics as that of the Swiss Alps.

# 5. Government

Since November 12, 1918, Austria has been a republic. A constitution was proclaimed two years later by which the state became a federal republic comprising Vienna as a separate unit and the provinces of Upper and Lower Austria, Salzburg, North Tirol, Styria, Carinthia, Vorarlberg, and German Western Hungary. The legislature is formed by the Federal Diet (Bundesrat) and the Federal Council (Nationalrat); the president of the Diet is president of the republic. The former

provincial diets retain their functions in relation to the provinces or "lands."

# 6. People

The old Dual Monarchy was one of the most polyglot states in the world; the new republic, in theory, comprises one type of people only, the German speakers. On the basis of community of speech Austria includes the German-speaking districts of the former western Hungary, but for the sake of convenience Austria became a compact state and does not include any of the "islands" of German speakers which were dotted about Austria-Hungary. Along the boundary zones such admixture of speech as is inevitable in the decade following the Treaty of St. Germain-en-Laye (1919) will disappear.

The census of 1923 records the population as 6,527,000, of whom the majority were German speakers. Of the members of what used to be called the subject races quite a large number help to swell the comparatively excessive concentration of people in Vienna. Nearly a third of the population are Viennese, while the immediate surroundings of the city in the Vienna basin comprise practically the only area of dense population in the country. Except here at Graz, Linz, Salzburg, and Innsbruck the density of the population does not exceed 256 per sq. mile. Tirol, Salzburg, Carinthia provinces and the western half of Styria constitute a large area of sparse population, less than 128 per sq. mile.

In addition to being almost entirely German speakers the Austrians are almost without exception adherents to the Western Papacy. This solidarity of religious feeling is reflected in the respect which is shown to the priests and in the regularity with which the people attend mass on Sunday mornings. AUSTRIA 559

# 7. Industries, Commerce, and Communications

Austria is a poor country, the bulk of the population is engaged on the land, yet the produce is insufficient for the needs of the people. Wheat, rye, and oats are grown almost universally to satisfy local requirements; Upper Austria is the most productive province, yet even here the arable farming is not so successful as in Moravia or Hungary. Cattle, sheep, and pigs are reared throughout the state and in sufficient numbers for local needs.

Manufacturing industries are confined almost entirely to the capital and the large towns.

River traffic by the Danube is limited by the comparative shallowness of the river within the state; traffic on the other rivers is unimportant.

The railway system centres on Vienna and suffers under the new political conditions by being more extensive than Austria really needs. The routes follow five main directions controlled in the case of four of them by the valley-ways previously mentioned. By the Danube valley railways go west to Bavaria and east to Czecho-Slovakia and Hungary; by the Leitha valley a route goes through the Semmering Pass with one branch via the Enns valley, the Pinzgau and the Inn valley to the Arlberg tunnel for Switzerland, and other branches via the Mur valley to the Adriatic ports. The fifth route is northward with one branch to Prague and another through the Moravian Gate to Berlin.

# 8. The Tirol

A description of the Tirol in relation to the Brenner Pass will be found on pp. 80-83, as the southern part of the Tirol is now Italian. The northern section of the Tirol is an Alpine land draining towards the north by the upper waters of the Lech, Isar and Inn and comprising almost wholly the valley of the upper Inn. By the valley of this river past Kufstein the Tirol has close connexion with Bayaria.

In the north-west the basins of the Danube and the Rhine are brought very nearly into communication with one another by the Stanzerthal and the Klosterthal which lie in the same east-and-west line, but are separated by the Arlberg or mount of the arle or mountain-pine.1 The districts vor dem Arlberg, that is, on the Rhine or Swiss side of the mountain, were acquired by the counts of Tirol, by purchase and otherwise, at various dates between 1375 and 1523, but as long as communication between the opposite valleys was across the Arlberg Pass (5910 feet), the commercial relations of Vorarlberg, as it is called, were with Switzerland rather than with Austria, but the Arlberg railway tunnel (6:37 miles long, 4300 feet high at its summit), opened in September 1884, has brought these valleys also into more intimate connection with the Austrian republic, and has established a remarkably direct route between northern Switzerland and Vienna and Budapest.

In the fifteenth and sixteenth centuries the mineral wealth of the Tirol caused it to be regarded as the richest of the Austrian crown-lands. Then that part of the valley of the Inn which beens north-eastwards into Bavaria was renowned for its silver and copper mines, but now the *mining industry* is comparatively small, and neither copper nor silver is of any importance among its

<sup>&</sup>lt;sup>1</sup> This is the derivation regarded as most probable by Egli. The mountain-pine, *Pinus pumilio*, is a dwarfed and crooked species highly characteristic in this region. It is known in the Alps as *Knicholz*, or knee-wood, from its habit of growth, the stem and branches mostly exhibiting sudden bends and twists.

productions. Beds of iron ore are, however, worked in the same district as those containing the old silver and copper mines, and iron ore is smelted at Jenbach and Pillersee, near Schwaz. Lignite also occurs in the lower part of the Austrian Inn valley, and Hall, a few miles below Innsbruck, is one of the chief salt-producing centres of the Austrian dominions. Zinc is a product of the Passeierthal.

Innsbruck <sup>1</sup> (the capital) is the only town with more than 10,000 inhabitants. It is a progressive urban centre at the most important junction on the Brenner route. The first mention of Innsbruck known to Egli <sup>2</sup> belongs to the year 1151; but it is interesting to note, as testifying to the natural importance of this situation, that a southern suburb of the town still bears in the form Wilten (the name also of a Premonstratensian monastery founded in 1128), the ancient name of the Roman station, Veldidena, that commanded the same river crossing at the north end of the Brenner route.

# 9. The Eastern Alpine Districts and the Territory north of the Danube

East of the Brenner at least three passes have to be crossed in traversing the whole width of the Alps. The general direction of the valleys causes the main lines of communication to run east and west rather than north and south, and the north and south routes which are created by the necessity of reaching the seaboard undergo considerable deviations from the direct line. Two railway routes connect Vienna with Trieste, but both have to pass round the Julian Alps and the mountainous

<sup>&</sup>lt;sup>1</sup> (Innsbruck), pop. (1869), 16,300; (1890), 23,000; (1920), 56,000.

<sup>2</sup> Nomina Geographica, 2nd ed.

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country to the south, no railway yet passing by the steep and difficult route across the *Predil Pass* (3810 feet) and down the Isonzo valley. Both of these routes begin by ascending to the *Semmering* tunnel (2970 feet) and descending the valley of Mürz, but on reaching the Mur valley they diverge. One route proceeds some distance up the Mur valley, on leaving which it turns eastwards, keeps due southwards to the Pettauer Feld, after which it winds and twists west and south to Trieste. The other route continues up the valley of the Mur to about the meridian of Klagenfurt, and then also proceeds southwards, crossing the *Neumarkt Saddle* (3300 feet), and passes far to the south-west by the Pontebba Pass before turning south and south-east by Udine to the sea.

The only other important connection right across the Alps is that with Salzburg, and in this case there is no direct connection by rail. In coming from the south after the Neumarkt Saddle is crossed, the most direct route is by the carriage road across the Radstädter Tauern Pass (5700 feet), leading into the head of the Enns valley, whence another pass (with a railway, however) leads into the valley of the Inn. If one wishes to proceed the whole distance by rail one must, after crossing the Neumarkt Saddle, descend the Mur to near Leoben, and then pass north-westwards into a lower part of the Inn valley by the railway across the Schober Pass (2785 feet).

With a surface almost wholly occupied by mountains and only narrow intervening valleys, with such difficulties in the way of communication as have just been pointed out, it is not surprising that the population should be small relatively to the area; it is rather to be wondered at that the population should be so large as it is. This sparse rural population is for the most part scattered

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over the country in small towns, villages, and hamlets. Apart from Vienna there is little more than half a million in towns with a population above 10,000. Besides Vienna, there is only one inland town, Graz, with more than 50,000 inhabitants.

Vienna, in German Wien, has an admirable situation, so that it, unlike Berlin, may be said to be marked by geographical conditions as well as by history for the capital of the monarchy. Yet it was not the first place to attain importance in this neighbourhood, to a large extent in consequence of the same geographical conditions. It had a predecessor at Carnuntum, extensive ruins of which are to be seen at the village of Petronell, near Haimburg, a less favourable site farther east on the Danube. form a reasonable conjecture as to why the less favourable site should at first have been the more favoured, we must consider the circumstances of the time, that of the Roman empire, when Carnuntum had precedence. In the time of the Roman empire communications east and west were at least as important throughout the whole length of the Mediterranean as those between north and south. The road connecting Aquileia, the Roman port at the head of the Adriatic, with Milan on the west and Sirmium (Mitrovica) on the east, was even more important than any connecting that seaport with This easterly road was to some extent coincident with modern routes, but Aquileia being more northerly than Trieste, the passage to the south of the Julian Alps to Laibach, or rather to its predecessor Æmona, was also more northerly—by Görz and the valley of the Wippach. From Æmona, an even more important point of convergence in ancient times than the modern Laibach, though it, like the ancient town, is the meetingplace of the roads from the north and south of the

VIENNA: FRANZENSRING.

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Julian Alps, even the most northerly of the roads that led thence in different directions maintained the easterly direction farther than at present and first turned northwards, in the west of the modern Hungary on reaching the eastern foot-hills of the Alps. Hence it reached the Danube at a more easterly point than the site of the modern Vienna. But Vienna also is an ancient town. It is believed to have a name of Celtic origin, and under the Roman names of Vindobona, Vindomina, etc., it had considerable importance. It was at Carnuntum, the centre of operations against the Marcomanni, that Marcus Aurelius addressed to himself those thoughts which have reached the world and a distant posterity, but it was probably at Vindobona that that emperor ended a troubled life ill suited to the temper of a philosopher, but signally fitted to show that his thoughts on duty were the guides of his conduct.

Certain advantages, it has been already intimated, Vienna and Carnuntum had in common. Their sites are both on a great navigable river and upon the side of it from which civilisation spread northwards. They both lie at the part of the Danube nearest to the Adriatic and opposite that level plain of the Marchfeld (a celebrated battlefield), crossed by the chief northern road in this quarter, that through the Moravian Gate (p. 571), Carnintum nearly opposite the eastern, Vienna at the western end of the plain. They both lie near the mouth of that narrow valley between the foot-hills of the Alps and the northern highlands of western Austria, towards which all roads from the east converge. But Vienna has the additional advantage of a more convenient site. It lies at a point more easily fortified, exactly at the mouth of the valley referred to, and at the mouth of the small river Wien, in a recess or bay of the foot-hills

of the Alps, the slopes of which its modern suburbs ascend, and on one of which, in the suburb of Hietzing, stands the imperial palace of Schönbrunn. When Carnuntum was destroyed in the fourth century by the Germani it perished for ever, but Vienna always rose again sooner or later from disasters. After the fall of Carnuntum it was fortified by the Romans and made their headquarters in this region. It was taken and plundered by Attila in the next century, but still continued to flourish under the Lombards. It afterwards vanishes from history for a time and first reappears in 1030, but it was not till the twelfth century, when it was refounded by Henry Jasomirgott, that it again came into prominence, and it grew in importance with the power of the Habsburgs and the development or revival of civilisation in eastern Europe. Like other European capitals it has increased its population with great rapidity in the present century.1

Since the old fortifications have been levelled and laid out in spacious boulevards, with monumental structures in the Paris style, Vienna has become one of the most brilliant capitals in Europe. These boulevards, or the "Ringstrasse," as they are called, enclose the old heart of the city—in fact, "the City," as it is usually spoken of by the inhabitants, everything outside of this circle being regarded as suburbs. In "the City" are all the finest warehouses, commercial establishments, the palaces of the nobility and foreign ambassadors, the government offices, and the "Hofburg," or imperial palace, a structure more remarkable for its size than its beauty. In the very centre of "the City" rises the grand old

<sup>&</sup>lt;sup>1</sup> Pop. (1754), 175,400; (1820), 260,000; (1840), 357,000; (1869), 607,500; (1880), 726,000; within present boundaries, 1,112,000; (1890), 1,364,500.

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Gothic Cathedral of St. Stephen, with its graceful spire no less than 475 feet high. There are also some fine palatial residences in the environs, whose ornamental grounds are generously thrown open to the public; besides which Vienna boasts of some splendid art collections (including an excellent picture-gallery in the Belvedere), one of the largest libraries in Europe, a university and academy of the sciences, together with many other scientific institutions; and lastly, a far-famed theatre.

Numerous silk, cotton, woollen, leather, hardware, musical instrument, porcelain, and carriage factories, in the suburbs, contribute largely to the wealth of the place. A railway system, radiating in all directions, helps to promote the large trade carried on, especially with Russia and Turkey through Hungary, and through Trieste with the Levant and Italy. All this, combined with its Parisian refinement and gaiety, and the various polyglot elements and national types here gathered from north, south, east, and west, imparts to Vienna a thoroughly cosmopolitan character. The inhabitants themselves—a more mixed race than the ordinary Austrians of the lowlands—have developed a taste for the beautiful, and a sense of what the Parisians call chic, the Viennese fesch, universally displayed in the dress, the manners, and social life of the people. A few miles to the south on the other side of the hills, separating the city from the river Schwechat, is the imperial country seat of Laxenburg, the grounds belonging to which, like those of the palace of Schönbrunn, are a favourite place of resort.

Prominent features of Lower Austria are the great monastic foundations, with their sumptuous buildings, and the many ruined castles, several of which adorn the highly romantic course of the Danube between Melk and Krems.

Graz, the capital of Styria, lies at the north end of a fertile expansion of the Mur, where the valley of that river forms so important a link in the communication between north and south, and where there is the easiest connection with the head of the Raab valley eastwards. As an industrial town its importance is increased by the lignite deposits in the neighbouring valley of the Kainach (to the south-west). Klagenfurt,2 the capital of Carinthia, lies not on the Drave, but on what may be described as an expansion of the valley of that river traversed by the lower part of the small stream which gave name to the town, 3 the same valley as that which in ancient times appears to have contained, at a short distance from the site of the modern Klagenfurt, the town of Virunum,4 capital of Noricum, and the upper part of which is now traversed by a railway connecting it with the main line from Vienna to the south-west. Salzburg, the ancient Juvavum, the capital of the crown-land of the same name, is situated where the Salzach valley opens out into a circle of about 6 miles in diameter, and is entered by roads from the foot-hills of the Alps on the east and west. Its centre is a hill crowned by a citadel on the left bank of the river. It is one of the most romantically situated cities in all Europe, a city which, owing to its Italian style of architecture, has received the name of "the German Rome." The archbishop of this see bears the title of "Primate of Germany," and it may be mentioned that

<sup>&</sup>lt;sup>1</sup> (Graz), pop. (1920), 158,000.

<sup>&</sup>lt;sup>2</sup> (Klagenfurt), pop. (1869), 15,300; (1890), 19,800; (1920), 26,000.

<sup>3</sup> Klagenfurt = Glanfurt, "ford of the Glan" (Egli and others).

<sup>&</sup>lt;sup>4</sup> Possibly identical with Noreia, which is supposed to have given name to Noricum. See *Geog. Jour.* xi. pp. 431, 432, and the papers there referred to (*Mitteil. der. geog. Gesellschaft Wiens*), 1897, Nos. 9 and 10.

<sup>&</sup>lt;sup>5</sup> (Salzburg), pop. (1869), 20,300; (1890), 27,200; (1920), 37,000.



its first bishop was the Irishman St. Virgilius, one of the most enlightened men of his time (eighth century). He was the contemporary, and in some respects the rival, of St. Boniface, the English apostle of Germany. Amongst the mineral waters of the duchy, those of Wildbad Gastein enjoy a European reputation. To the south-west is the Sonnblick, with a meteorological observatory (established in 1886) at the height of 10,170 feet. Linz, the capital of Upper Austria, on the Danube, not far from the mouth of the Traun, probably had its position determined at an early date as the crossing-place of the road leading from the salt-mines of the Salzkammergut to the southern angle of Bohemia. Wiener Neustadt and Steyr 2 are the only other two towns with more than 20,000 inhabitants: the former in the middle of the Steinfeld, a plain at the foot of the Alps about 30 miles south of Vienna in Lower Austria; the other, the great iron and steel-working town where the Enns leaves the hill country in Upper Austria. The charming little town of Ischl in the Salzkammergut, with its famous mineral waters and salt-works, is well worth a visit. The absence of a great town at Bruck an der Mur, at the important junction of roads, and now of railways from northern Italy, and from Graz on the way to Vienna across the Semmering, is accounted for by the fact that the valleys are here too contracted to afford support for a large population.

<sup>&</sup>lt;sup>1</sup> (Linz), pop. (1869), 30,500; (1890), 43,000; including suburbs, 48,000.

<sup>&</sup>lt;sup>2</sup> (Steyr), pop. (1869), 13,400; (1890), 21,500.

### CHAPTER XIII

### CZECHO-SLOVAKIA

### 1. Extent and General Relief of the Land

CZECHO-SLOVAKIA is not so distinctly mountainous Austria nor yet so definitely a lowland as Hungary. is even more awkwardly shaped than Austria, for it extends for some 600 miles from west to east, while its width from north to south ranges from about 100 to 30 In comparison with Austria it lacks unity, for Austria is Alpine while Czecho-Slovakia includes the plateau of Bohemia, itself a physical unit, on the west, the Carpathian lands of Slovakia and Ruthenia on the east, and between them the basin of the Morava (March) with its mountain rims forming three sides of Moravia. On a smaller scale the basin drained by the Topla and Ung to the Theiss, and bounded on the north by the low east Beskids, forms a break between the highlands of Slovakia and the isolated highland of Ruthenia. Its area, 56,000 square miles, exceeds the total for Austria and Hungary together.

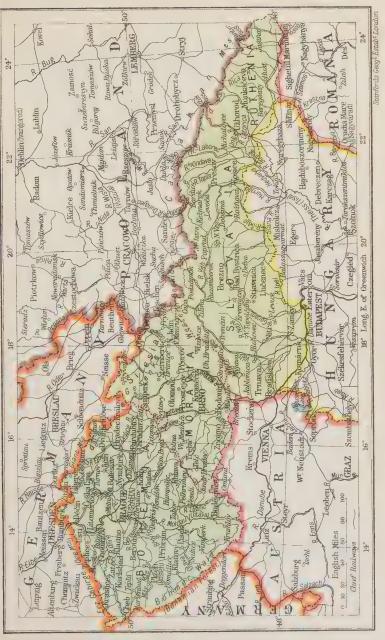
The northern boundary is well established and definitely controlled by physical features, except at the Moravian Gate between the Gesenke and the Western Beskids. The western boundary along the Ore Mountains and Bohemian Forest for the edges of the Bohemian Plateau is similar, but the southern boundary in part is unrelated to the relief. Except where it runs along the Morava, Danube, and Ipoly, it crosses the streams and ridges indifferently. Nowhere is this apparent disregard of relief control more definite than in connection with the Theiss, here called the Tisa; the river is touched at Cap (Csap), but is crossed farther upstream to be used still higher in such fashion as to put Sighetul (Maramarossziget) in Rumania and Hust (Huszt) in Ruthenia.

Bohemia, separated from Bavaria by the Bohemian Forest, from Saxony by the Ore Mountains, from Silesia by the Giant Mountains, and from Moravia by the uplands of Jihlava (Iglau), is a separate unit with a drainage and general slope to the Elbe gorge almost at the north corner of the diamond-shaped plateau. From the source of the Ultava (Moldau) in the south to the Elbe outlet the land drops 1000 feet.

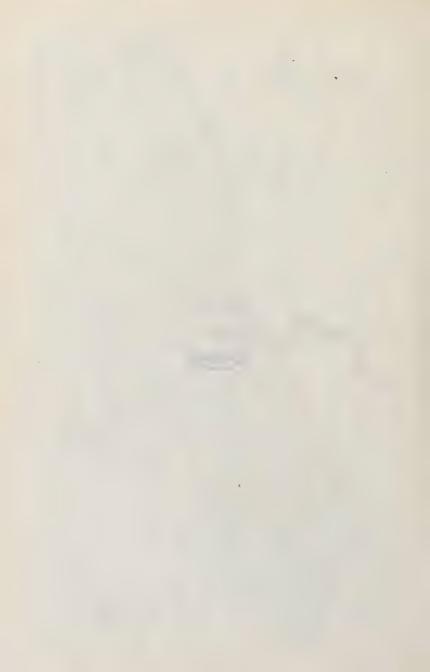
Moravia is flanked by the Jihlava uplands and the White Carpathians. With it must be included Silesia, which belongs physically to the Oder valley lying, as it does, on the northern slopes of the Sudetes. The passageway of the Moravian Gate leading to the Oder and Vistula valleys, to Germany and Poland, is a gap based on the course of the upper Oder.

Slovakia consists centrally of the highest portions of the Northern Carpathians, where the Tatra and similar high ranges reach to the south and join with the Matra across the border in Hungary. West of the Tatra the Vah (Waag), Nitra (Nyitra), and Hron (Gran) form narrow valleys which debouch on the section of the Little Alfold, north of the Danube, which here forms the boundary. East of the Tatra the Sajo and Hernád

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form similar valleys, which terminate at Miskolcz in Hungary in the gap between the Matra and the Hegyalya, and north-east the Poprád drains to the Dunajec in Poland.

Autonomous Ruthenia slopes south from the Forest Carpathians, containing sometimes the whole, sometimes the greater part of the small tributaries of the upper Theiss.

# 2. Geology

The Bohemian mountain rim and practically the whole of the southern half of the diamond consists of crystalline rocks. The lower northern half of the plateau, which includes the greater portions of the valleys of the Elbe (Labe), Ohře (Eger), Jizera (Iser), Mže (Beroun), contains Silurian, Carboniferous, and Permian rocks.

The Carpathian curve is determined by the Tertiary sandstones which culminate in the Western Beskids and the Forest Carpathians. Within the curve, especially along the right bank of the upper Vah, is a zone of Cretaceous craggy limestones, which bear evidence of erosion by the sea in Tertiary times. This fragmentary zone corresponds with the limestone zone of the Alps, best seen in the fantastic peaks of the Dolomites. Farther within the curve, and filling the space between the Polish boundary and the Danube gorge at Vács, the rocks are granite, which are superior in their scenic wildness to anything in the Alps except, perhaps, the area round Mont Blanc. The wondrously beautiful mountain tarns which dot this region, making it a paradise for the tourist, are reminders of the erosive force of the mighty glaciers which once fretted the crystalline surface.

Moravia contains portions of the granitic walls of

Bohemia, Tertiary sandstones which have been eroded by the Morava and its tributaries, and Cretaceous limestone in the Moravian Gate. It forms a definite transition zone between the system of the Alps-Carpathians and the Bohemian fragments of the older chain of European mountains.

# 3. Climate and Vegetation

The mountains of Czecho-Slovakia are mainly responsible for its climatic character. Snow-clad in winter, they affect the temperature of the intervening valleys so that the rivers are ice-bound for several weeks, and on the Elbe, for example, navigation is impeded by a frost period of some eleven weeks. In Ruthenia the snow is useful to the lumberjack in the forests, who relies upon it for assistance in transporting the logs. In warmer months the mountains control the rainfall by sheltering the valleys and the lowlands.

The Sudetes cause the harvest on the northern slopes in Silesia to be reaped a month later than in Moravia. The general downward slope northward of Bohemia to the Elbe valley makes the right-hand side of the valley near Litomerice (Leitmeritz) the most fertile area in the country. Average temperatures in Prague are—January, 27° F., and July, 65° F.; Brno (Brünn), January, 25° F., July, 64° F.; in the upper Theiss valley, January, 25° F., and July, 65° F. These figures indicate a period of frost and snow in mid-winter and a summer temperature slightly warmer than prevails in south-east England.

All the high land in Czecho-Slovakia is forested; lumbering is the dominant industry in Ruthenia. The Břdy Forest in southern Bohemia covers 400 square miles. Between the heights of 2300 feet and 4500 feet the pine is cultivated in extensive plantations on the

Bohemian Heights. Spruce attains great heights in the Bohemian Forest, but is more frequent in the Forest Carpathians in Ruthenia. Deciduous trees occur on the lower slopes, and are planted in the valleys to act as wind-shields, being removed when their purpose is achieved.

Above the tree-line there are valuable summer pastures, especially in the Giant Mountains. The valley floors contain large areas of water meadow much utilised for pasture.

### 4. Government

Czecho-Slovakia is a bicameral democratic republic. By the constitution, the president, elected by the two chambers for seven years; the Senate of 150 members, elected for eight years; and the Chamber of Deputies of 300 members, elected for six years, constitute the legislative and administrative authority. The first president, T. G. Masaryk, was, by special exception, elected for life.

Ruthenia, having been declared autonomous at the foundation of the State, is not included within the twenty-two administrative divisions into which the country is divided for local government purposes; it has a separate administration as regards local authorities, schools, and religion. There are fifteen electoral areas excluding Ruthenia, and votes are cast for parties, not for candidates, on an adult suffrage without any sex disqualification.

# 5. People

Czecho-Slovakia contains rather less than 14,000,000 people, who are distributed unevenly. Coal and other mines occur on the northern edge and within the block mountains of Europe along a line which extends from Lille

to Lodz; Bohemia and Silesia fall within this area, the whole of which is characterised by a dense population. Northern Bohemia has therefore a crowded population. As distance increases to the south and east of this populous area, the proportion of people declines until, in the far east, the population of Ruthenia is as sparse as it is among the Alpine heights of Austria.

The heart of the country is peopled by Czechs, in Bohemia, Moravia and Silesia, and by Slovaks, a closely allied people, in Slovakia. The Czech-Slovaks form about two-thirds of the total population. On the margins, especially on the inner slopes of the Ore Mountains and on the Little Alföld, are alien elements—Germans, who form a fifth of the total, in the west, and Magyars in Slovakia. The Ruthenians, or Little Russians, who number about half a million and form the majority of the people in the autonomous area, form the south-western fringe of a different Slav people, who live in the main in the neighbouring lands of eastern Galicia and the Ukraine, and who adhere to the Greek Church.

The Czech is by religion a Roman Catholic; centuries of Austrian intolerance forced this unity upon the former subject race, with the result that political freedom led to the fracture of religious bonds, and, in January 1920, a National Church was founded and declared independent of the jurisdiction of the Pope.

During the decades of oppression many Czechs emigrated to the United States, where they proved themselves the most capable and most highly civilised of the thousands of Slav immigrants from Central Europe. The emigrant stream has gradually become smaller since the opening of the twentieth century.

The sense of unity and discipline which, during the period of the renascence of the Czech nationality,

permeated the Czechs and enabled them to triumph even before the Great War over Teutonic oppression, and which gradually filtered across the White Carpathians and strengthened the spirit of passive resistance to Magyar brutality among the Slovaks, owes much to the Sokols. Originally an imitation of German gymnastic organisations, the Sokols were, first, bands of men and women devoted to an ideal of physical culture, and gradually became intellectual with special care for social and economic studies on a national basis.

# 6. Industries, Commerce, and Communications

Czecho-Slovakia is one of the richest countries of Central Europe on account of its natural resources. Throughout the whole area the sedimentary rocks are rich in minerals. Excepting only salt, there is hardly a useful mineral which does not occur in Bohemia.

The best coal is mined west of Plzen (Pilsen); that of Kladno is next in importance. Coal occurs also in Bohemia west of Most in the Ohře valley, near the east end of the Giant Mountains. The western portion of the Tešin (Teschen) coalfield, near Karvina and Ostrava Vitkovice, near the Moravian Gate, yields good coal.

Lignite beds are worked near Usti (Aussig), Teplice (Teplitz), and Liberec (Reichenberg) in north-west Bohemia, near Hodonin in the valley of the Morava and in the valley of the Nitra in Slovakia.

Iron is found in the Ore Mountains, but the most productive deposits lie between Plzen and Prague; Dobriš and Kladno are the chief smelting centres. Ore is mined in the Tešin coalfield and in Slovakia between Kosice (Kassa) and Ban Stiavnica (Schemnitz). There are deposits of iron-ore in Ruthenia.

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Silver-lead was the mineral which gave rise to the name of the Ore Mountains; the ore is mined near Přibram. Silver-mining on the Jihlava uplands between Kutna Hora and Jihlava has declined. The ore is also mined in the Ban Bystrica (Kremnitz) district of Slovakia. Copper ore occurs in the Bohemian Forest, Ore Mountains, and Giant Mountains, where the quantity mined is slight, and near Nova Ves in Slovakia. Tin, antimony, zinc, nickel, cobalt, and bismuth are mined in small quantities in Bohemia. Graphite is found near Budejovice (Budweis), china clay near Kralovy Vary (Karlsbad), potter's clay and fireclay in Moravia.

Bohemia and Moravia were formerly the chief arable lands of Austria, while the Slovakian portion of the Little Alföld was an important cereal area in Hungary. While the climate, being cooler and rainier than in Hungary, is not suitable for maize except in Slovakia, or for wheat except in favoured spots in Bohemia and in Slovakia, it is warmer than in Austria and produces large crops of the hardier cereals—rye, barley, and oats. The breweries, of which the best known are at Plzen, obtain large quantities of barley, chiefly from Bohemia and Slovakia, and hops, which are best grown in the Zatec (Saaz) district in the Ohre valley, and near Olomouc (Olmütz) in Moravia. Potatoes and sugar-beets are important root crops which are widely grown. Cattle-rearing is a valuable industry of the uplands, especially where there are extensive summer pastures. Merino sheep have ousted the rough-woolled native breed. Pigs abound. Horse-breeding is a favourite occupation on the Moravian plains.

In Moravia occur extensive game preserves, formerly the favourite haunts of the Austrian landed proprietors; deer, wild boar, and game birds are preserved. The "Golden Road" near Kralove Hradec (Königgrätz), "Paradise" near Teplice, and "the Garden" near Litomerice are names which emphasise the special fertility of the Elbe Valley. The rock fractures in the edges of the tableland of Bohemia have given rise to numerous mineral springs of world repute; such are Karlovy Vary (Karlsbad) and Marianske Lazny (Marienbad) in the west of the plateau.

Water-power from the mountain rim is used for the textile industry, which is located near the coalfields in German Bohemia; Rumburk, Liberec, Warnsdorf, and Trutnov (Trautenau) are industrial centres. Sugar is refined at Pardubice, lace is made at Domazlice (Taus), hardware at Pisek, tobacco at Tabor; Brno is noted for its woollen goods.

The water-ways are chiefly the Elbe and Ultava in the west and the Danube in the centre. The Elbe is used for rafts in the forest region and for steamers for 68 miles above the Ultava junction; the Ultava is used by boats from Budejovice and has been canalised for steamers below Prague.

The Danube has been described in the chapter on Austria; its importance to Czecho-Slovakia is signalised by the selection of the Slovakian river port, Bratislava, as the headquarters of the International Danube Commission.

The mountainous boundaries of the country are crossed almost at will by the railways which connect Vienna and Buda Pest with Germany, Poland, and Russia. Bohemian railways converge on Prague; Budejovice, Jihlava, and Plzen being important minor junctions. Brno is the chief and Olomouc a minor junction in Moravia.

Slovakian railways are, at present, localised; most of the towns are connected by lines which converge on

Budapest, but the important line runs from Bratislava along the valleys of the Vág, Poprád, and Hernád to Kosice, with only two connecting lines to Moravia and three lines across the Carpathians to Poland. East of Kosice four lines cross the Carpathians from eastern Galicia and converge on Budapest.

### 7. Bohemia

Bohemia is the lozenge-shaped territory in the northwest of the monarchy marked off from the rest by its frontier highlands, for the most part ranges of mountains, and the direction of its slopes which connect it almost entirely with the basin of the Elbe and the North Sea instead of the Danube and the Black Sea. Its frontier mountains, the *Riesengebirge*, or Giant Mountains, with other ranges of the Sudetes on the north-east; the *Erzgebirge*, or Ore Mountains, on the north-west; and the *Böhmerwald*, or Bohemian Forest, on the south-west, all separate it from the German empire; while on the south-east the Jihlava uplands, a broad series of low hills, occupy the borderland between it and Moravia.

Its principal valley is that of the *Elbe* which stretches from east to west towards the north-east of the province, and this fact has probably contributed to attach the name of Elbe to the headwater traversing this valley, instead of to the Ultava, which is in every respect the more important river. The basin of the *Ultava* is twice as great as that of the Elbe above the confluence; <sup>1</sup> the river is about 47 miles longer; its width and depth are greater, and it is navigable while the upper Elbe is not. Moreover, the Elbe below Melnik continues the general direction of the Ultava, although it may be pointed out that just at the confluence the Elbe above and below are

<sup>&</sup>lt;sup>1</sup> Ultava basin, 11,890 sq. m.; that of Elbe above Melnik, 5735 sq. m.

in a straight line, while the Ultava joins at an acute angle. On the other hand, the greater part of the course of the Ultava is through a deep and narrow valley, in which there is neither road nor railway between a point about 15 miles south of Prague and another some 5 or 6 miles north of Budejovice. From Budejovice, however, it is navigable, and from Prague it is regularly used by steamers, although to establish and maintain this waterway extensive works have been required since the time of the first king of the house of Habsburg (end of thirteenth century).

Of the other valleys of Bohemia the principal are those of the Biela and the lower Ohře which are separated from one another by the Middle Mountains, a low range of Tertiary basalts and dolerites resting on sandstones, clay slates, and plastic clays bisected by the Elbe between Litomerice and Usti. On the west both valleys are blocked by the Duppauer Stock, a basaltic mass which confines the Ohře on the north to a gorge at the base of the Erzgebirge. The northern of these two valleys, that of the Biela, is occupied chiefly by the deposits of Tertiary freshwater lakes, including considerable areas of lignite, which is found also in the southern valley in the basin of Žatec. From the northern valley the Erzgebirge rise with remarkable abruptness in some places in a single step, in others in terraces.

Elsewhere the interior of Bohemia consists of an almost continuous assemblage of hills and narrow valleys, generally presenting a more or less gently undulating surface, the hills and valleys varying in direction, but converging, on the whole, to the one outlet of the basin, that by which the Elbe escapes near the northern apex between basaltic cliffs in Bohemia and massive sandstones in Saxony.



Minor centres of convergence mark the position of important towns in the interior. Of these the most important from its foundation (700 A.D.) has been Prague, situated near the centre of the country where the waterway of the Ultava is crossed by the routes from Ohře to the eastern angle of the lozenge. The name is Slavonic, in Czech Praha, which in that language now means "a threshold." In that sense the name is certainly appropriate enough, as the town may fairly be described as lying at the threshold of the more elevated country to the south; but in all probability the name was originally applied in an older sense, that of "rapids," the same as that of the cognate Russian term *poroji*, and referred to the rapids caused in the Ultava by its bed being here crossed at various places by bands of porphyritic rock. But there were various other circumstances that combined to fix the precise site of the town and increase its commercial importance once it had been founded. The bridging of the Ultava is here facilitated as in so many other ancient towns by islands in the middle. Moreover, an expansion of level ground on both banks gives ample room for a large town, for which there is no other convenient site for a considerable distance either above or below. The details of the physical features also direct its important roads from different points. The valley that gave name to the modern suburb of Karolinenthal on the right bank points the way to the valley of the upper Elbe. Another minor valley on the same side leads south-eastwards towards the valley of the Sazava, a southern tributary of which then marks out the great north-south road (now accompanied by a railway) parallel to the upper Ultava leading past Tabor, whence it follows the valley of the upper Lužnic. On the opposite side several minor

depressions open the way to the valleys of the Ohre and the middle Mže, while the lower Mže joins the Ultava valley only a short distance above Prague. The great southern road and railway on the west side of the Ultava follow the Mže valley as far as the town of Beroun, and there several valleys in a continuous line mark out the line of communication with the south as clearly as is done on the right side. Enjoying such advantages from a remote date, Prague naturally boasts of many ancient monuments, among which may be mentioned the old royal castle of the Hradschin on a hill 240 feet high on the left bank of the river, celebrated in history as the scene of the defenestration of 1618, the throwing of the imperial governors from a window of the castle on a dunghill beneath, which was the signal for the outbreak of the Thirty Years' War, the Karlsbrücke, with its mediæval gate towers, and the buildings of the university, the oldest of all German universities (founded in 1348 on the model of that of Paris), now (since 1883) divided into two entirely separate sections, a German and a Czech. In modern times the city has grown rapidly in population from the stimulus given to its manufacturing industries (machinery, etc.) by the vicinity of the chief coal-basin of Bohemia, though this growth affects not so much the city proper. within the fortifications, as the suburbs of Smichov, Karlin (Karolinenthal), Žižkow, and Křalovské Vinohrady, which. however, form with Prague only one urban centre.1

Among other well-marked centres of convergence are Cheb in the angle between the Erzgebirge, Fichtelgebirge, and Böhmerwald, Plzen on the Beroun, and Budejovice on the upper Ultava, all of them progressive towns, but

<sup>&</sup>lt;sup>1</sup> Population, including these suburbs (1890), 310,000; (1910), 617,000; (1920), 676,000.

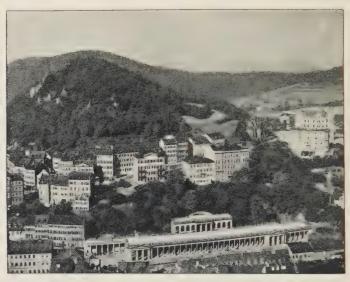
above all Plzen, where the convergence is very marked, and where the industries of the town (manufacture of plate and cut glass, beer-brewing, etc.) are stimulated by the presence in the vicinity of coal, iron, and other minerals, as well as extensive forests. It lies at the margin of an elevated region of Silurian rocks stretching north-eastwards from the middle of the Böhmerwald, a region intersected by the valleys of the head streams of the Mže, all meeting at or near Plzen, and all sufficiently defined to determine inevitably the course of roads and railways. Budejovice 2 lies in the first important expansion of the valley of the Ultava above Prague, and is not only the terminus of the Ultava navigation, but also the point of convergence of the roads and railways leading south from that town on opposite banks of the river as well as others leading from Plzen and Tabor. Graphite is mined in the neighbourhood, and there is a considerable timber trade, but the comparative sparseness of the population of the country round does not admit of its growing up to be a large town.

Northern Bohemia, which is by far the richest part of the province not only in virtue of the favourable character of the soil and climate, but also on account of the great abundance of the *mineral deposits* and mineral springs, has numerous considerable towns, but apart from Prague no large one. At the present time the most valuable minerals are coal and lignite. Coal is mined in several localities, but the most important basin is that close to the north margin of the Silurian highlands in the angle between the Ultava and Mže north-west

<sup>&</sup>lt;sup>1</sup> (Plzen), pop. (1869), 23,700; (1890), 50,200; (1910), 81,000; (1920), 88,000.

<sup>&</sup>lt;sup>2</sup> (Budejovice), pop. (1869), 17,400; (1890), 28,500; (1910), 45,000; (1920), 44,000.

and west of Prague around Slany, Kladno, and Rakovnik, and next in importance outliers of the same basin to the north, north-east, and east of Plzen. A third lies at the base of the Sudetes in the north-east of the province, north-west and south-east of Trutnov. The chief lignite basins as already intimated lie to the south of



KRALOVY VARY: THE MUHLBRUM COLONNADE.

the Erzgebirge, the most important being those round Zatec, and those between the Erzgebirge and the west half of the Mittelgebirge, from Usti to near Most, with Teplice for the centre. Next in importance are silver ores, which in the later Middle Ages, when Bohemia was the chief source of this metal, were mined all over the kingdom, but are now worked chiefly in and round Přibram, on the great southern road from Beraun,

although the Joachimsthal mines on the south side of the Erzgebirge, which gave name to the thaler (dollar) which was first minted here in 1518 or 1519, are still productive. Iron mines are principally worked among Silurian quartzites on the north-west of the highlands between Plzen and Prague. Tin and zinc are mined on the southern slopes of the Erzgebirge, lead in the west of the kingdom near Mies, and porcelain-earth and fireclay are found in various places, the most celebrated porcelain-earth deposits being those near Kralovy Vary. Of the manufacturing towns of the north the chief is Liberec, long noted for its woollens, situated in the valley between the Lausitzergebirge and the Isergebirge, a few miles to the north-west of Gablonz, the chief centre of the Austrian manufacture of glass and paste-beads. Among others are Trutnov, another woollen manufacturing town, Usti,2 and Litomerice. Kralovy Vary, Marianske Lazny, Teplice, and Bilina are all noted watering-places.

# 8. Moravia and Silesia

These territories, Moravia, an old margraviate, and Silesia, the small remnant of a duchy the greater part of which was taken from Maria Theresa by Frederick the Great of Prussia, lie between Bohemia and Slovakia, the eastern limit being formed by that portion of the Carpathian system which is known as the Western Beskids. Silesia is in two portions—one north of the Sudetes, the other north of the Beskids—separated from one another by a tongue of Moravia to the east of the

<sup>&</sup>lt;sup>1</sup> (Liberec), pop. (1869), 22,400; (1890), 30,900; (1910), 36,000; (1920), 35,000.

<sup>&</sup>lt;sup>2</sup> (Usti), pop. (1869), 10,900; (1890), 23,600; (1910), 39,000; (1920), 40,000.

river Oder, whose valley, continued by that of its tributary the Luha, and then, on the other side of a narrow water-parting near Weisskirchen, only about 1000 feet in height, by that of the Beczwa, forms what is known as the *Moravian Gate*, which has for ages been the principal means of communication between the plains in the south-east of Germany and the basin of the Danube.

The surface of Moravia is in many respects similar to that of Bohemia, but its principal valley, that of the upper Morava or March, which drains 90 per cent of the surface, is a flat plain about 30 miles in length by 3 to 10 miles in width, stretching from north-west to south-east about the middle of the province. In this plain the Morava breaks up in most places into several arms, but about the middle it is confined to a single channel, and on this part, where the crossing is consequently least obstructed, opposite the mouth of the valley of the Bistrica, which opens a northern road across the mountains, stands Olomouc, till 1640 the capital of the province, still the ecclesiastical capital, and one of the strongest fortresses of the empire. It is, however, a declining town, whereas Prerov, where the Moravian Gate opens on the valley of the March, is advancing. Brno,<sup>2</sup> the present capital of Moravia, is situated at the head of the broader part of the valley of the Schwarzawa, and at the point where it is joined by the Zwittawa whose valley offers an easy route, now followed by a double line of railway, to the northern and more populous part of Bohemia. It is also the seat

<sup>&</sup>lt;sup>1</sup> (Olomoue), pop. (1869), 15,200; (1880), 20,200; (1890), 20,000; (1910), 51,000; (1920), 57,000.

<sup>&</sup>lt;sup>2</sup> (Brno), pop. (1869), 74,000; (1880), 82,700; (1890), 94,500; (1910), 202,000; (1920), 221,000.

of various manufactures (woollens being the most important), its machine industries being promoted by the Rosice-Oslavany coalfield a few miles to the west. The fortress of the Spielberg adjoining Brno, which long served as a State prison, and was rendered celebrated as such by the narrative of Silvio Pellico, is now used as barracks. Znojmo occupies a somewhat similar position to Brno at the head of the wider part of the valley of the Thaya in the neighbourhood of beautiful scenery.

### 9. Slovakia and Ruthenia

The Carpathians, the second great mountain range of central Europe, begin on the eastern frontier of Moravia, hard by the Danube. They describe a semicircle of about 880 miles in extent, starting at Bratislava and ending at Orsova, also on the Danube, and cover a total area of about 22,500 square miles. Flanked round about by lowland plains, they consist of two great mountainous areas—the north Hungarian and the Siebenbürgen or Transylvanian highlands, connected together by the chain of the Forest Carpathians.

The Carpathians are far inferior to the Alps in height, no single peak reaching 10,000, and but few exceeding 6500 feet. The highest, the peak of Gerlsdorf, or, as it is called in the language of the Magyars, Gerlachfalva, in the Tatra group at the most northerly part of the curve, is no more than 8737 feet in height. Hence these mountains also lack the great glacier-filled valleys so characteristic of the Alps. On the other hand, volcanic masses, such as basalt, trachyte, etc., occur much more frequently. In different parts the Carpathians present very different physical features corresponding with differences in geological structure. The wildly

weathered granite rocks of the Tátra, exhibiting scenes of savage grandeur unparalleled elsewhere in Europe, save in the mountains of southern Spain, stand out in sharp contrast to the broad flat sandstone ridges of the Forest Carpathians.

The north Carpathians fill the area in the north of Slovakia, between the upper part of the Theiss and the Danube, before it turns to the south. They form a succession of ranges decreasing in height inwards, with a prevailing easterly trend to the east of 19° E., and a prevailing south-westerly trend to the west of that meridian. The whole region is noted for its mineral wealth. To the east Kosice, the largest town in eastern Slovakia, is the centre of a district containing various metals and noted also for its mines of the noble opal. To the south-west, in the basin of the Hron, lie Ban Stiavnica and Ban Bystrica, long celebrated for the production of the precious metals, especially silver, though the production of both has greatly declined. Lignite is mined among Tertiary rocks in several of the valleys. Salt abounds in the valley of the upper Theiss.

The principal valleys are those of the Vág (Waag) and the Hernád, which almost encircle this region except on the south. Their headwaters are within about a mile of one another in the chief longitudinal valley in the north, that between the High Tátra and the Low Tátra, a district abounding in mineral springs and beautiful watering-places. Thence the Vág flows west through the whole of this valley, and then after traversing the gorges of the two Fatra ranges and the Nitra Mountains, finally flows south-west in another longitudinal valley between the last-named range and the Western Beskids.

<sup>&</sup>lt;sup>1</sup> Pop. (1850), 13,000; (1869), 21,700; (1890), 28,900; (1910), 40,000; (1920), 53,000.

The Hernád flows eastwards through narrower valleys and then through gorges, but after leaving these it turns south through a wide and rich valley between the ends of metamorphic and Tertiary ranges on the west, and the volcanic heights of the Soyára and the Hegyalja (or Hegyallya) on the east. It is in this last valley that Kosice lies, and it is the Hungarian slopes of Hegyalja that produce the famous white wines of Tokaj.

The whole length of the valleys just indicated is followed by a railway, and the valley of the Hernád also forms the chief communication between central Hungary and the north side of the Carpathians, inasmuch as the valley of its tributary, the Tarcza, is separated only by a low water-parting (2630 feet) from that of the Poprád, and by this route a railway now runs to the Galician lowlands. East and west of the Tátra the culminating line of the Carpathians goes by the name of the Beskid Mountains. Over the Western Beskids the Jablunkau Pass leads from Poland into Hungary at a height of less than 2000 feet above sea-level. The Eastern Beskids are rather a broad, low mountainous region than a chain of mountains. They are crossed in a tunnel by the railway from Tokaj to Pržemyšl.

### CHAPTER XIV

### POLAND

# 1. Physical Features—Climate—Vegetation

Modern Poland is a consequential republic on the Great War. Once again a sovereign state occupies the key-position between the Carpathians and the Baltic Heights in the isthmus which connects peninsular Europe with the remainder of the Old World. By location Poland must be a "buffer" state between east and west when they conflict, and a "transition" state when east and west react harmoniously. The famous—or infamous, if that term be preferred—partitions were inevitable when west and east became sufficiently powerful to tear down the barrier between them; the rise of the Uniate Church was a transitional compromise between the Roman Catholic west and the Greek Orthodox east. Modern Poland has arisen because her neighbours on either hand are powerless to prevent the cohesion of this westernised Slav group and their aggrandisement eastwards at the expense of less powerful Slav neighbours.

Physically, Poland is a portion of the Great Plain of northern Europe, a lowland scarred and grooved during the Ice Age and overlain with the debris of erosion accumulated as the ice retreated. One can imagine the

# POLAND AND THE BALTIC STATES





ice-sheet limited on its southern front along the line of parallel 52° N. with projections or bays to fit the slopes of the old block mountains of Central Europe and the folded Carpathians. As the ice retreated a somewhat cliff-like front faced the snow-capped mountain front to the south over a water-logged lowland, with the heaviest water-load near the ice and water flowing down the slopes from the south northward. One can equally well imagine that this water found an outlet westward, probably near the mouth of the present Elbe. When the ice edge halted, the west-flowing water trenched a wide trough and produced wide, shallow valleys in which the streams of to-day are misfits meandering by an accidented course along the floor of a valley which they could not have produced. So, probably, at one time was developed a drainage system which concentrated a vast fluvial flow on Elbe-mouth. A main stream flowed along the ice edge parallel to the present Baltic coast from the Niemen through parts of the Narev, Vistula, Netze, Oder valleys to the Elbe valley near the site of Berlin. A somewhat parallel stream followed parts of the Bug, Bzura, Warta, and Oder valleys to join the main flood near the Berlin site; probably there was a braided cross-connection between these two lines of flood-water near the site of Warsaw. To the south a third flood-route by the valleys of the upper Warta, Bartsch, and Oder, with cross-connections probably by the Pilica valley, and farther south still the fourth and highest route followed the Upper Oder valley to the same point of concentration near Berlin. Drainage was intermittent as morainic material dammed the waters into a lake or burst away and loosened the pent floods. Subsequently, as the ice retreated farther, short streams to the Baltic at the mouths of the Oder and Vistula increased in capacity

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and eventually beheaded the earlier streams to form the present Oder and Vistula rivers, which comprise portions of the old rivers joined by subsequent reaches which lie athwart the general run of the ancient drainage system. This hypothetical sketch of the early fluvial system of the European plain explains the facts that the rivers trend westwards, and the large tributaries enter the main rivers from the east.

The ancient flood-routes are important to-day since they are easy routes of human transport; they suggest naturally the construction of canals which would reproduce the early drainage system; they help to explain the sites of Warsaw and Berlin at convergent points of valley-ways; and they suggest why Poland should be limited on the north by the Baltic Heights with an outlet—a Polish corridor—by the newer lower Vistula to the sea; they suggest one cause of the westward extension of the Polish people into Posnania (Posen) along the Warta and Netze routes.

In one sense the Vistula divides Poland, for the ancient flood-ways are now flat valley floors liable to inundations and obstacles to transverse traffic; yet at the same time the Vistula unites the sections of the country which comprises fairly completely the basin of the modern stream.

Of the other rivers that wind over the European plain to the east of the Elbe the Vistula affords the greatest facilities for navigation. It is already navigable for vessels of considerable size when it crosses the old German frontier. Even at low water the depth at that point is upwards of 3 feet, at high water  $5\frac{1}{2}$  feet. It flows, however, through a marshy region, now partly drained. Its delta, lying behind the Frische Nehrung and the sand-dunes forming its western con-

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tinuation, a triangular area measuring 30 miles from the forking of the Nogat to the dunes, and from 30 to 33 miles at the widest stretch between the higher grounds on its east and west, extends over an area of upwards of 600 square miles. Formerly it was one great swamp, but has been converted into a fertile tract by the construction of embankments begun by the Teutonic knights at the close of the thirteenth century (1288-94, under the Landmeister Meinhard von Querfurt). As in other deltas, numerous changes, natural and artificial, have been made in the river-arms by which it is traversed. At present the main arm of the Vistula (below the fork of the Nogat, which forms a minor delta at the west end of the Frisches Haff) enters the Baltic by a straight cut, about 6 miles long, at Schiewenhorst, near the middle of the delta, but this cut has been only recently made-since the law of June 1888 for the regulation of the mouth. About the origin of this cut a canal, the Haff Canal, runs eastwards to the Frisches Haff, and since the construction of this canal the branch of the river that formerly entered the west end of the Frisches Haff, from a point a short distance below, the branch known as the Elbinger Weichsel, no longer receives any water from the Vistula in a normal state of the river. The western branch of the river, known as the Danziger Weichsel, has its origin about the same point, but is no longer directly connected with Danzig, as its name would indicate. Since a breach in the downs in 1840 it has entered the Baltic at Neufahr. and its western portion is cut off from it by a lock at Grossplehnendorf. The western arm forms the harbour of Danzig, and communicates with the sea by a canal begun in the seventeenth century but since enlarged, so that the depth at Danzig is now nearly 23 feet.

Poland comprises Polish Silesia in the south-west corner, a portion of the Upper Oder valley with an outlet south by the Moravian Gate; Western Galicia, the valley of the Upper Vistula with a frontier along the Carpathians with Czecho-Slovakia; Eastern Galicia, the valley of the San and a portion of the Russian platform which marches with Czecho-Slovakia, Rumania, and Russia and reaches south-east to the Black Sea drainage of the Dniester; Posnania, along the German frontier; the Polish corridor between East Prussia and the rest of Germany: Mazovia, the plains between Posnania and the Vistula; Podlesia, the plains east of the Vistula which march with Russia. Most of the country is lowland, yet in the south of the old Russian Poland on either side of the Vistula are the Heights of Kielce, including the Silesian Highlands, and Lomza.

Climatically, Poland is a border region between the continental climate with long cold winters and long hot summers separated by short spring and autumn seasons and the oceanic climate of Western Europe. Annual and seasonal variations depend almost entirely upon the oceanic winds, the westerlies. On the average the actual July mean temperature is about 60° F.; the summers are hot with clear skies and are the rainy period, although the rains are sudden bursts of precipitation which total some 15 inches for the season. In districts farthest from the sea in the south-east the winters are dry but cold, frost lasts for a period of at least four months, when snow lies continuously. To the westward the cold is less intense, the frost period is shorter. and there is an increasing chance of an unusually mild spell or even a mild winter season entirely. Whenever the winter westerlies can bring their load of partly condensed and relatively warm moisture to obscure the POLAND 597

sky, to soften the frosts, and, frequently, to melt the ground snow, the weather is duller, damper, and warmer. The frequency of these westerly intrusions reduces the frost period to less than three months; the Vistula is ice-bound for three months or so, yet Danzig harbour can be kept ice-free except during the severest winters.

Naturally, the surface of Poland should be clothed with forest, the trees being coniferous in the colder areas and deciduous elsewhere. Yet Poland is transitional in its modern vegetation cover. Western influences have led to the removal of the forest and tillage of the soil, so that the proportions of arable land, meadow, and forest vary from west to east, yet are intermediate between the highly cultivated areas of the German plain and the forested regions of White Russia. The signal exception to this generalisation occurs in south-east Galicia, where the soil conditions, loess and black earth, of the Russian platform give rise to a widespread cultivation, as much as 80 per cent of many districts being well-tilled arable land.

#### 2. Government

Poland is a post-war republic, a group of areas of different administrative systems and history clamped together by a unifying sentiment, a national ideal and sealed, for the moment, by the benison of the League of Nations. The governmental machinery was German in its completeness in Posnania and the Corridor and in Silesia, Austrian in its bi-polarity between Pole and Ruthene in Galicia, and Russian in its corruption on the Central Plains. The new republic is controlled by a President elected for seven years, a council of guardians of the law with the power of veto upon Acts of Parliament, and a responsible ministry. Parliament (Seym)

comprises two houses elected upon a universal adult franchise; it is convened, opened, prorogued, or closed by the President.

For local purposes the pre-war governments of the old Russian Poland have been perpetuated and the new areas have been formed into similar administrative districts. It forms one of the most difficult tasks of the new state to create a bureaucracy capable to unifying the judicial, administrative and educational practices of the three formerly discordant areas. Education is compulsory in elementary schools at the cost of the State. Religion is not a State concern.

#### 3. People

Most of the Poles are Western Slavs. The population totals some 30 millions, almost three times the population of the former Russian Poland. The people comprise four classes: the nobility and the peasantry, landed folk, who have remained, except for several million emigrants to the United States, in situ; the Jewish townsfolk, who number some three millions and provide certain elements of a middle class; and the new growth, the factory folk, who inhabit the industrial and mining districts and are by necessity townspeople. Rather more than a tenth of the people are Uniate Ruthenes in south-east Poland.

Owing to the diversity of political and local government there is an unusual discordance in the characters of different groups of the same class of folk. The peasant of Posnania, trained to field-work on German lines, is antithetic to the peasant of Podlesia, who found little stimulus under Russian rule towards increased

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ability as a farmer, and still struggles against the tyranny of Nature as expressed by marsh and forest.

The poverty of governing tradition due to the formerly careless and selfish nobility, to the general illiteracy of the peasant, to the peculiar racial inhibitions connected with Jewry and the newness of the factory class, has added greatly to the difficulty of unifying the new State.

Most of the people are Roman Catholics under the metropolitan archbishop of Warsaw and the cardinal archbishops of Posen and Lemberg.

Many of the more adventurous spirits had emigrated to America, and some to the Westphalian mining and manufacturing areas; many of the peasants of the west were migrant labourers who worked, on a seasonal basis, on German farms; what contribution these folk will make to the future of their fatherland remains to be developed.

Throughout the country the people have been disturbed; their land a battle-ground for Teuton and Slav, their forests despoiled, the agricultural wealth destroyed or confiscated, their rude rural peace broken by marching hosts; they have been forced into some notions of the rest of the world and its needs, and out of the changed outlook the builders of the nation hope for a renewal of a vigorous national life.

# 4. Industries, Commerce, and Communications

Poland is predominantly a farming land. Owing to its origins as arable land cleared of trees, except in the woodless loess area of the south-east, and as glacial debris redistributed by the floods of later times and, now, marshy in character, the land is tillable only on the

margin of cultivation. This marginal characteristic implies much work, great forethought, patient, laborious tillage for a comparatively small and poor return.

The length of winter alone is not necessarily a farming handicap; it is not so, for example, in Saskatchewan, but the transitional character of the climate introduces an element of uncertainty, and this, coupled with the marginal forest type of natural vegetation, accounts for the cultivation of rye, potatoes, and sugar-beets and the stable crops; oats are grown more extensively than wheat. These facts place Poland in a different category from Rumania since there is no great surplus of acceptable food-stuff for export; they also suggest that there is no great economic reason for the preservation of large landed properties to be worked as farming units to supply grain for foreign trade.

The marginal character of the land also accounts for wide expanses of meadowland and pasture on which are reared cattle and pigs. Here occurs room for growth as the dairying industry might well be developed in a land of water-meadows and arable land best suited for root crops. The average peasant is, therefore, a tiller of the soil whose horizon is limited by his own needs and the needs of the immediate locality; exception must be made, however, in the case of the German-trained farmers of Posnania.

Poland made a great fight for a large share in the mineral output of Silesia, and secured Teschen and a portion of its coalfield, as well as part of the mining and industrial districts of German Upper Silesia. The newly won minerals and those of the neighbouring portions of Russian Poland make the south-west a great mining region. Rock-salt has been mined at Wieliczka and Boehnia near Cracow for centuries, and the spacious

mines with chapels, altars, and statuary are visited by many tourists. In the south-east, on the outer line of the Carpathians, are the oil-mines, allied in character to those of Rumania, capable of yielding some 5 per cent of the world's supplies. Otherwise the absence of igneous rocks and of masses of intruded lava into the sedimentary rocks which form the base of the country precludes the possibility of extensive exploitation of minerals.

Based upon the minerals of the south-west are the factories of the Lodz district, where textile industries give rise to important imports of raw cotton, wool, and jute, and supply quantities of cottons and woollens for the home and Russian markets. Machinery, tools, and farm implements are important imports, while potatoes, beet-sugar, and dairy produce are exported to Germany.

Communications by railway centre on Warsaw, with the exception of the Galician line from the Moravian Gate through Cracow and Lemberg to Kiev. Warsaw is the point of divergence of the routes east to Leningrad and Moscow. Vilna, Bromberg, and Brest Litovsk are the chief railway junctions. Use is made of the rivers for summer traffic, and the Bromberg-Oder Canal connects the Vistula with the canals and canalised rivers of North Germany.

## 5. Towns

Warsaw, in Polish Warszawa, stands in a beautiful situation on a terrace 100 feet above the river Vistula on its left bank, and communicating by two bridges with the suburb of Praga on the right bank. A walled city, with boulevards on the Paris model, the capital contains the Cathedrals of S. John and Alexander Nevski, the

<sup>1</sup> Pronounced varshava.

Zamek, a library-museum, and the Krasinski Palace. It has important woollen factories and an annual wool fair. It was not till the fifteenth century that it began to vie with Cracow, but it has since, on the whole, steadily grown in importance to the present day, though it has suffered time after time by the events of war. Next to



WARSAW.

the capital the largest town is Lodz; which is entirely a growth of modern times, the prosperity of the town dating from the establishment of the first cotton-mill in 1835; only a poor village before that date, it now comprises one main street 5 miles in length and is the centre of a busy cotton-manufacturing district;

<sup>&</sup>lt;sup>1</sup> (Warsaw), pop. (1860), 161,000; (1890), 490,000, exclusive of 33,000 military; (1897), 638,000; (1920), 980,000.

<sup>&</sup>lt;sup>2</sup> (Lodz), pop. (1840), 20,000; (1860), 33,000; (1891), 144,000; (1897), 315,200; (1920), 420,000.

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brewing, distilling, and machine-making being other industries.

Cracow, in German spelling Krakau, in Slavonic Kraków, occupies an important strategical and commercial position on the Vistula, where that river flows through a narrow valley, forming the approach from the east to the south-east of Silesia and the Moravian Gate. The importance of the situation was recognised in former times in the fact that it was for two and a half centuries (1320-1569) the capital of Poland, and at the present day its strategical value is indicated by its walls and exterior circle of forts, and its commercial importance is revealed by the rapid growth of its population. It is 160 miles southwest of Warsaw, at the head of the Vistula navigation. Chiefly a commercial and route-centre, it trades extensively in timber, salt, cattle, and grain. importance of Lemberg<sup>2</sup> (in Polish Lwow), which was founded in 1259, is now wholly commercial and arises from the fact that it lies about the middle of the broadest expanse of the Galician plains on that line, about the parallel of 50°, where the easiest river-crossings from east to west are found, and from which several river valleys provide the routes for comparatively easy railway communication with the south, south-west (across the Carpathians), and south-east. Here, also, accordingly the population has increased with great rapidity. Formerly the capital of Austrian Galicia, it is an outpost of western civilisation among the Ruthenes. Posen (in Polish Posnan), the chief town of Posnania, formerly the capital of the Prussian province of Posen, is an ancient Polish town once known as Stragon, and

 $<sup>^1</sup>$  Pop. (1869), 50,000; (1880), 66,000; (1890), 74,500, or, including Podgórze on the right bank of the river, 88,000; (1920), 150,000.

<sup>&</sup>lt;sup>2</sup> (Lemberg), pop. (1809), 42,000; (1869), 87,000; (1880), 110,000; (1890), 128,000, more than 30,000 being Jews; (1920), 206,000.

the seat of the Polish rulers. It stands on the Warta, 158 miles east of Berlin, and is a busy manufacturing and trading centre. Bromberg, a canal and railway centre, is a rival of Posen; Czenstochowa is a railway junction in the south-west; Lublin a farming centre in Podlesia with sugar factories; Bialystok a railway junction in the north-east.

#### 6. Danzig

The outlet of Poland to the Baltic Sea is Danzig (in Polish Gdansk), on the west side of the Vistula delta. Since the Great War the port and the small area of the delta itself has become a city-state under the League of Nations. Its importance lies chiefly in its position near the Vistula outlet and in its harbour, which can be readily cleared of ice in winter. Its value to Poland is evidenced by the treaty arrangements which are necessary to secure from the Danzigers, jealous of their autonomy, adequate transport and shipping facilities.

Danzig is first mentioned in 997, but did not become a seaport of any consequence till it came, in 1309, into the hands of the knights of the Teutonic Order. It and the neighbouring German port of Elbing on the Frisches Haff flourished under the sway of that body, and both are interesting to Englishmen on account of the trade relations established with them by the Merchant Adventurers in the fifteenth and sixteenth centuries. The old rivalry between the two ports, often rising into bitter hostility over disputes in connection with the water supply of the Nogat and the Danzig arm of the Vistula, has long ceased, through the decline of Elbing, which can now be reached only by vessels drawing no more than 10 feet.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> (Elbing), pop. (1816), 18,000; (1861), 25,500; (1880), 35,800; (1895), 45,800; (1920), 67,000.

#### CHAPTER XV

#### HUNGARY

#### 1. Extent and General Relief of the Land

Hungary has been definitely reduced to a lowland country. Half of it does not reach an elevation of 300 feet, and only a small portion exceeds 600 feet above sealevel. It has become almost as small as Austria, being but 35,000 sq. miles in area; yet it is more compact, being roughly 200 miles wide by 140 miles from north to south.

A line of hilly country, the Bakony Forest, extends along the north shore of Lake Balaton, and continues in a north-easterly direction as the Matra and Hegyalja just within the boundary on the north. The Danube cuts through this highland at the gorge of Vács. South of Balaton lower hill country extends to the Kapos, and beyond that river rises to higher ground in the hills north of Pécs.

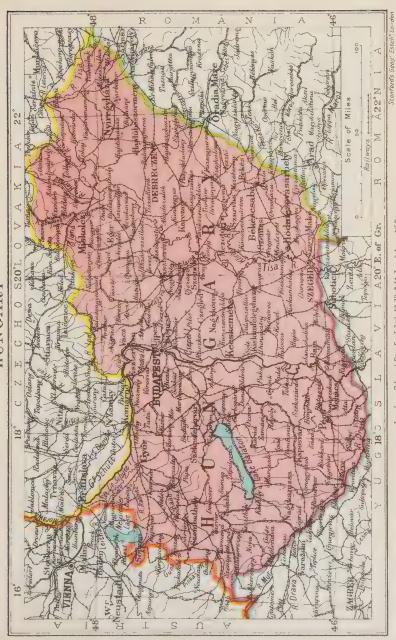
Except for a section along the Danube and Ipoly (Eipel) in the north-west, a second section along the Drave in the south-west and small lengths along the Theiss in the north-east, the boundaries lack a physical justification. They cross the rivers Raab, Danube,

Theiss, Maros, Körös, etc., apparently at random, and have been drawn, on the whole, to give to Rumania and Czecho-Slovakia the advantages which accrue from the pre-war railway system. The boundaries do not follow the edge of the plain since they cross the Alföld, cutting off the fertile southern Alföld, including the Banát, from Hungary; and since they lie well away from the Bihar Mountains in the east and the Carpathians in the northeast. In all these cases the adjacent area outside Hungary is a typical boundary zone with an admixture of peoples, yet land inhabited solely by Magyars has been excluded from Hungary along at least two-thirds of the boundary. It is hard to conceive of a set of boundaries which could have made the future of Hungary more difficult. As a punishment of the Magyar ruling caste for their century-old oppression of the "subject races" within the Carpathian curve the boundaries are vindictive rather than just.

Hungary consists, then, of portions of two plains—the Alföld in the east and the Little Alföld in the northwest, separated by hilly country of low elevation.

#### 2. Rivers and Lakes

The chief rivers are the Danube and the Theiss, but it must be noted that only small portions of these waterways have been left in Hungary. The Hungarian reaches of these rivers have been described in the preceding chapter; it remains to be noted that there is no connection within Hungary between the Danube and Theiss waterways, while rafts from Oradea-Mare (Nagy-Varad) in Rumania must pass through Hungary by the Körös and the Theiss to reach the Danube in Rumania.



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Of the tributaries of the Danube in Hungary the Rabeza and the Raba (Raab) cross the Little Alföld; the Sio flows from Lake Balaton. These streams are of little value, except the lower Sio, which is canalised and has canal connections with the streams which flow from the Bakony Forest near Szekesfehérvár.

The only important Hungarian tributary of the Theiss is the Körös, by which the waters of the Berettyö, the Swift Körös, the Black Körös, and the White Körös, all of which rise in Rumania in the Bihar Mountains, reach the main stream.

The lakes of Hungary, except Lake Balaton, are water-filled shallows or pans in the alluvium of the plains. Lake Balaton, or, as it is called in German, the Plattensee, has a length of about 50 and an average breadth of 10 miles. It lies at the foot of the Bakony Forest, which gives a somewhat picturesque appearance to its northern shores, though on the south its banks are low and swampy. Its depth is only from 10 to 13 feet. It has often been proposed to drain it, and about 500 square miles of swamp on its banks have actually been recovered for cultivation. Though it has an outlet to the Danube (the Sio) its waters are brackish, in consequence of the large number of mineral springs by which it is fed.

## 3. The Plains

The eastern plain across which the Theiss meanders is to the Magyars simply Alfold, "the plain." The only variety is imparted by the differences in the vegetation, natural or artificial, occasionally by the absence of all vegetation. For here and there occur sandy tracts of absolute desert, and in the south one great desert of about 60 miles in length and more than 10 miles in

width, is occupied only by sand and moving sand-dunes. But for the most part the soil is fertile and well adapted for the growth of wheat. The natural vegetation is that characteristic of the steppes of eastern Europe and western Asia, tall grasses, withering in the summer drought, and in winter replaced by storm-swept morasses. Considerable areas are still left in the natural state, except that the herbage is cropped by sheep and long-legged cattle. Such is the characteristic scenery of the pusstas, a name said to be derived from the Slavonic puzty, meaning "uninhabited." Here nature is stripped of all her charms. The monotony of an interminable expanse, broken here and there by a few trees, by the post and long lever of the characteristic Hungarian well, or by the tower of some distant township shimmering in the glowing atmosphere, soon wearies the curious eye of the lonely wayfarer, while a depressing effect is produced on his spirits by the noiseless calm of the surrounding wastes. Yet in their still grandeur a certain poetry hovers over the pusstas, while the somewhat frequently recurring phenomenon of the fata morgana may even act as a stimulant to the stranger unfamiliar with such atmospheric effects. But under the stimulus of the growing demand created by the manufacturing districts of England and other parts of western Europe, more and more of these plains is being converted into fields of wheat, the quality of which is unsurpassed. It is on these plains that most of the extension of the wheat area recorded in the statistical reports of Hungary has taken place, giving rise to an extensive immigration, especially in harvest time, from the more densely peopled and less fertile regions in the north.

Early summer rains are followed by days of intense heat with equally cold nights. Fierce snowstorms sweep the level expanses in winter, which is a season of biting cold. The shifting sands are held in check by trees planted during recent years, the brackish lagoons have been drained, and the sinuous courses of the streams made straight. Yet withal the Alföld is not attractive; there is little to do during the long winters, and the peasant's barren existence is ameliorated but little by the haphazard efforts of the landowners to provide recreation and amusement in the towns and villages. The latter are "garden cities" laid out on rectangular lines round a market-place, each house being detached in its own plot. Between villages there are no houses, for the Magyar is essentially a townsman; an inheritance from his years of struggle with Turkish hordes when union for defensive purposes was necessary. The only habitations are summer houses wherein dwell the cultivator and his family during the labouring period, when each working day lasts from sunrise till sunset, and the reed huts of the herdsmen who watch over the sheep-flocks and the herds of cattle and horses.

The Little Alföld, though equally a plain, lacks the unique features of its greater neighbour. Nearer German Austria and the Slovak highlands, rarely overrun and never ruled by the Turk, better watered and lacking in sandy wastes, with numerous patches of trees and no great depth of loess or alluvial soil, the Little Alföld has no great vistas, no garden cities, and no striking contrast with the lowland plains of western Europe.

## 4. Geology

Hungary is almost entirely a country of alluvial plains, the only older rocks which obtrude being the crystalline rocks which form the core of the hilly areas.

Near Pécs the crystalline obtrusion is associated with the chief coalfield of Hungary, of which the output suffices for no more than a third of the needs of the people.

## 5. Climate and Vegetation

The slight difference in level from one end of the country to the other, coupled with its situation at some distance from the ocean within the encircling Carpathians, gives to Hungary a continental climate. Cold dry winters relieved by occasional snowstorms, fiercely hot summer days with very cold summer nights, an absence of cloud and rain except during the spring and early summer, long summers and long winters which change rapidly into the short intervening seasons—all these are characteristic of the steppe lands of which Hungary forms the western extension.

The winter sleeping arrangements near the great stove, the tightly closed windows in winter, the sheep-skin cloaks worn with the fleece inside are typical of continental lands farther east, while the somewhat primitive rural habitations and the open-air life of the summer months suggest affinities with summer lands nearer to the equator.

The Alföld is a treeless, natural-grass land which varies from desert through meagre scrub to luscious pasture. The hills are forested mainly with deciduous trees such as beech.

#### 6. Government

Hungary was a kingdom united by dynastic ties with the former empire of Austria. Ruler after ruler of the Dual Monarchy recognised the separate entity of Hungary by being separately crowned as the Apostolic King with the crown of St. Stephen.

So definite and persistent is this idea of a kingdom that after the break-up of the Hapsburg empire the new government decided that Hungary is a monarchy ruled, at present, by a regent elected by the National Assembly with the assistance of a "Royal Hungarian Ministry."

During the thousand years of Magyar rule a system of municipalities, counties, and communes has been established as the administrative machinery for the control of the state. The central authority was mildly parental in regard to the Magyar districts and dictatorially autocratic over the outside districts; only Magyars were allowed to be officials, and railways worked on the zone system, schools, charitable institutions, doctors, midwives and hospitals, as well as forms of industrial insurance, were established largely for the benefit and in the interests of all who declared themselves Magyars.

These administrative amenities have been continued, and the Magyar will now bear the whole cost which formerly weighed heavily on the subject races.

# 7. People

The population of almost 8,000,000 is composed, outside Budapest, almost entirely of Magyars. The Jews form about 7 per cent of the people and exercise a power in the state out of all proportion to their numbers. The Magyar, both noble and peasant, has little interest outside the land. Trades, professions, commerce, the numerous avenues for labour which are associated with a middle class, have no attractions for the Magyar, who looks for employment in the army or civil service, and if not a landed proprietor prefers to be a state

functionary. The Magyar seems to have no instinct for business, little ability to manage men or industrial concerns, small desire for any avocation which requires breadth of vision on the one hand or close attention to detail on the other. Such characteristics combined with definite political oppression in earlier years forced the Jews to become journalists, entrepreneurs, financiers' agents, brokers and even bailiffs for the Magyar landed proprietor. The Jews engaged workmen and supervised them, organised the supply of extra labour on the land during the summer months, and, in fact, performed most of the tasks which the keen desire of the Magyar-ruling caste to be regarded as Western Europeans forced upon the Hungarians.

The Magyar is, in one special sense, isolated from the rest of Europe. He represents an ethnic element, based upon nomads from lands farther east, which is not Aryan and has affinity with the Finns. Although he has held his land for a thousand years, tradition never lets him forget he is descended from a conqueror who ruled by superior fighting prowess. Further, he speaks an alien tongue. No facility with Germanic languages, no skill with Latin or Greek will assist the foreigner to learn the Magyar speech, which, as it were, has hung an almost opaque curtain over the activities of the Magyars for many decades.

Previously to their settlement in their present domain the Magyars inhabited for a period of sixty years or so a region called Atelkuzu, probably the tract between the lower Danube and the Dnieper. From this they were driven out by the Turkish Patsinaks or Pechenegs, numbers of whom, as well as Kumanians, Jazygians, and Tatars, afterwards settled amongst them in the plains now known as Hungarian, and combined with the Magyars to form one people, amongst whom also are found remnants of the Huns and Avars who preceded the Magyars. The Magyars forming isolated groups in Transylvania, where they are known as Szekler, are probably descendants of the original Magyar settlers of Hungary.

An ethnic element which is almost as numerous as the Jews, yet which is in almost complete contrast with them, is provided by the Tziganes or Gypsies. Thieves rather than workers, charlatans not thinkers, rogues and vagabonds, not adherents of a precise legal code, the Tzigane supplies the Magyar with the æsthetic material which has a special appeal to the nomad. Tzigane music is fundamental to the Magyar people.

## 8. Industries, Commerce, and Communications

Even more than in Austria the energies of the people of Hungary are devoted to the land, whose fertility invites a much more intensive husbandry than has prevailed hitherto on the pussztas.

Maize is the popular cereal, being supplemented by wheat east of the Theiss and south of Lake Balaton. Hungary is much poorer agriculturally than the former kingdom, for the barley and sugar-beet areas of the northwest and the rich cereal lands of the Bačka and Banát in the south are now outside the limits of the state.

Cattle and pigs are reared everywhere, sheep east of the Theiss and west of the Danube, and horses between these rivers.

The home production of wool, flax, and hemp will probably prove insufficient, although the numbers of the textile factories have been reduced by the political changes.

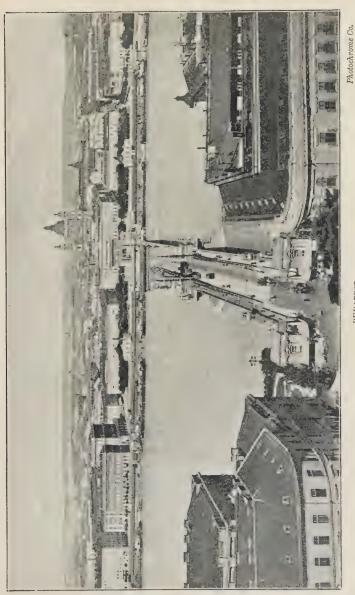
The economic situation of Hungary is now weak instead of strong; her former surplus of primary products which when exported paid for coal and manufactured commodities has disappeared, and she will depend in a great degree upon such commercial treaties and alliances as she can make with the countries of the Little Entente. Her coal supplies, chiefly from Pécs, are inadequate; she has now no forests to exploit, and no water-power.

The waterways have been previously described; they have become international, and have passed beyond Hungarian control.

The railway system formerly developed centred entirely upon Budapest and the zone system emphasised this centralisation. In former days cross-connections were difficult; it was frequently advisable to travel long distances along two convergent main lines rather than rely upon a much shorter journey over a branch line. This difficulty has been increased by the arrangement of the boundaries which has withdrawn important branch routes from Hungary. At the same time many important towns now lie outside Hungary, and main-line traffic will be curtailed. Few of the lines, even those used for express traffic, have a double track. By its contraction of area Hungary has made one gain; formerly in the far east of Transylvania parts of the country were more than 450 miles by railway from Budapest, now almost the whole of the country is less than 150 miles by railway from the capital. At the same time the proportion of the country which is more than 5 miles from a railway line was considerable diminished.

#### 9. Municipalities

The only large town of Hungary is its capital,



Budapest, situated where the Danube, in debauching on the great Hungarian plain, divides into two arms to enclose the island of Csepel. The original town dates from Roman times, and was confined to the right bank, the Danube there serving as part of the Roman frontier. The military colony here established bore the name of Aguincum, believed to be corrupted from Agua quinque, and to refer to the five hot springs at the base of the Blocksberg (in Hungarian Gellerthegy), which bears on its summit the citadel. Like Vienna and Prague the town covers a recess between the river and adjoining hills, whose slopes it partly covers, and the suburb of O Buda is separated from the main portion of the town on this side by hills that advance right up to the river bank. Till the thirteenth century the town was confined to this bank and was known as Buda, in German Ofen. but a new town known as Pest arose on the other side, and the two, which had already been connected by a suspension bridge since 1849 (previously by a bridge of boats), were united under the name of Buda Pest in 1873. It is on this bank, where the town has room to spread over the Hungarian plains, that the most rapid increase is taking place. While the portion on the right bank is the chief seat of administration and contains the royal palace (erected by Maria Theresa in 1748), that on the left bank is the commercial and industrial city, but it also contains (since 1784) the university.

The other towns on the great Hungarian plain are for the most part large agricultural villages rather than towns in the proper sense of the term, being spread over wide areas in proportion to their population and comprising within their limits a considerable extent of

<sup>&</sup>lt;sup>1</sup> Pop. Budapest (1873), 254,600; (1890), 492,000; (1910), 880,871; (1921), 1,184,600.

agricultural land. Owing to the fact that they have become known in western Europe chiefly through German maps, the German names of the towns have become for long more familiar than the proper Hungarian names, and some of these German names are so well established that they are included in parenthesis, but in accordance with recent usage the Hungarian name is given first in the following paragraphs.

East of the Theiss, in the ancient Dacia Superior, the principal towns are Debreczen 1 (in German Debreczin) and Hodmezövásárhely.<sup>2</sup> Between the Theiss and the Danube, in a region that never formed part of the Roman empire except in the extreme south, the largest towns are Szeged 3 (in German Szegedin), on the Theiss a little below the confluence of the Máros, and Kecskemét.<sup>4</sup> West of the Danube in the ancient Roman Pannonia are Györ 5 (Raab), Sopron (Ödenburg), Szombathely (Steinamanger), on the site of the ancient Sabaria, or Savaria, the ruins of which have probably given rise to the German name meaning "stone on the field," Szekesfehérvár (Stuhlweissenburg), and Pécs (Fünfkirchen). In the north-east in the valley of the Sajo and on the slopes of the Bükk Hegyseg is Miskolcz.<sup>6</sup>

 <sup>(</sup>Debreczen), pop. (1850), 30,900; (1910), 92,729; (1921), 103,200.
 (Hodmezövásárhely), pop. (1850), 33,100; (1910), 62,445; (1921).

<sup>2 (</sup>Hodmezövásárhely), pop. (1850), 33,100; (1910), 62,445; (1921), 60,850.

Szeged), pop. (1850), 50,200; (1910), 118,328; (1921), 109,890.
 (Kecskemét), pop. (1850), 31,900; (1910), 68,424; (1921), 72,760.

<sup>&</sup>lt;sup>5</sup> (Györ), pop. (1850), 16,500; (1910), 44,300; (1921); 50,000.

<sup>&</sup>lt;sup>6</sup> (Miskolez), pop. (1910), 51,459; (1921), 57,000.

#### CHAPTER XVI

#### RIIMANTA

#### 1. Physical Features—Climate—Vegetation

The former kingdom of Rumania was constituted of the two principalities, formerly separate, of Wallachia and Moldavia, together with the province of Dobruja (Dobrogea), which lies between the lower Danube and the Black Sea. The kingdom as constituted after the re-shuffling of boundaries consequent upon the Great War, during the years 1919-1920, includes Bukovina taken from Austria, Transylvania with part of the Banát taken from Hungary, and Bessarabia abstracted from The kingdom has more than doubled its area and has become one of the most compact States in Europe, being almost rectangular. The Danubian boundary on the south of Wallachia is the only land border-line which has not been changed; it has, however, been extended in the direction of Belgrade. The coastline on the Black Sea has been enlarged beyond the Danubian mouths to the mouth of the Dniester. The eastern boundary has been changed from the Pruth to the Dniester, but the land boundary along the north and west is an almost meaningless map-line across the Carpathians and the plain of Hungary, the Alföld.

 $<sup>^{1}</sup>$  Area, 50,588 square miles ; pop. (December 1894), 5,406,000, equal to about 106 to the square mile.

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Stanford's Geog! Estab! London



Two sections of the Carpathians, the Transylvanian Alps and the Moldavian Carpathians, separate Transylvania from Wallachia and Moldavia. These form the Southern Carpathians, which are distinct from the Northern Carpathians beyond the narrowing near the border zone between Ruthenia and Bukovina, in many geological features. The Carpathians belong to the great chain of folded mountains which crosses Southern Europe from the Alps to the Caucasus, yet in the south they lack the characteristic alpine scenery of snow-clad, fretted peaks.

The Transylvanian Alps extend from the Iron Gates to the Buzeu valley. They present a landscape of great maturity marked by a general level of rounded mountain masses flanked by youthful erosion features; the climb to the highest levels is most arduous at the commencement among the youthful steep-sided gorges. When the difficult primitive paths have been traversed the traveller reaches the forest belt where slopes are gentle and the going becomes easy, and beyond the forest he emerges on the plaiuri, the "paths" of the local shepherds. Here are alpine pastures, gay in late spring with alpine flowers, with gentle undulations of surface having peat-bogs in the hollows; at an elevation of some 6000 feet flattopped ridges extend for miles bordered by gorges sharply cut by more recent erosion which drop suddenly 3000 feet. In the Retiezat, Paringu, and Fogaras areas monadnocks of older rock rise above the early Miocene terraces. The edges of both monadnocks and the highest terrace are marked by cirques carved by Pleistocene glaciers, such as occur on the west side of the Predeal Pass. Below this highest terrace two lower terraces, the upper, late Miocene, and the lower, Pliocene, equally flattened and planed down by erosion form part of the mature landscape. The Vulcan Pass, which lies west of the youthful and well-nigh impassable gorge of the Jiu, is one of the plaiuri across the upper of these terraces; a magnificent highway constructed along the valley detracts from the usefulness of the pass. Shepherds live in temporary wooden houses, stine, on the meadows during the summer, and migrate to the plains of the Danube and the Dobruja for the winter.

The Moldavian Carpathians contain evidences of the three terrace levels of the Transylvanian Alps. Most of the area corresponds to the lowest terrace with monadnock formations corresponding to the middle and upper terraces; the highest levels are composed of conglomerates and hard stones, and the whole mountain area is complicated by the presence of flysch sandstones which do not occur farther south.

The outer edge of the Carpathians consists of timberclad foot-hills mainly of Tertiary formation which have been deeply etched by the numerous streams which flow to the Danube and Sereth. Between the foot-hills and the heights lie many depressions, of which that of Targu Jiu is best developed. These troughs filled with alluvium, downfolded during the earth movements which formed the mountains, are fertile, warm, treeless valleys dotted with villages. The foot-hills are the results of denudation and are etched by so many streams that frequently the intervening ridges are long and very narrow; the valley sides are marked by river-terraces on which the villages are built.

Within the curve of the Southern Carpathians lie the Transylvanian Basin and the Bihar Mountains. The Moldavian Carpathians abut upon three river-basins—those of Gyergyö, Csik, and Brasov or Haromszek. West of these valleys rises the volcanic mass of the Hargitta, which forms the eastern and higher portion of Tran-

sylvania. Kelemen is a similar volcanic mass, while volcanic ridges extend from the heights of Rodna in the main chain between the valleys of the Theiss and the Számos. The summits of these volcanic heights are equally elevated with those of the Carpathians proper. The bastion of Transylvania overlooking the Hungarian Alföld is the Bihar Mountains, where the Pliocene and late Miocene terraces of the Transylvanian Alps reappear with cirque-flanked monadnocks of the early Miocene terrace as a culmination between the Aranyos and the Black Körös and volcanics near the sources of the Swift Körös.

Bounded by the Hargitta, Transylvanian Alps, and the Bihar Mountains lies the plateau or basin of Transylvania, where rivers flow across wide flat valley floors between relatively low ridges characterised by the rounded surface typical of maturity of surface. In general the slope is from the Hargitta to the Máros gorge west of Deva. Villages are placed at convenient spots near the rivers where they approach the ridge slopes so that there is little risk from floods.

The Bihar foot-hills are narrow dissected ridges between wide valleys which gradually merge into the Alföld.

Between the Carpathian foot-hills in Moldavia and the Dniester lies the plateau of Moldavia and Bessarabia sloping in general south to Galats. The Sereth, Pruth, and their tributaries flow in wide flat valleys cut below the plateau level with terraced sides and meander by braided courses to join the Danube; marshes frequently border their lower reaches. Between the foot-hills of the Transylvanian Alps and the Danube is the plain, narrow in the west and widest in the east. The alluvial soil, gravelly in the west and with a greater proportion of

loess in the east, is due to the load brought down by the rivers from the Carpathians; these tributaries have forced the main stream of the Danube across the gradually deposited plain until it was held by the edge of the Balkan plateau along a scarped face in Bulgaria. Silt is continually being added to the plain, and in dry seasons the rivers may cease to flow as much of the water percolates through the soil. Where the Danube turns north is the Baragan Steppe with an underground supply of water so deep that wells are pierced at least 60 feet before the water-level is reached.

Between the Danube and the coast is the Dobruja. In the north low heights, the Dobruja massif, are related in structure to the heights of the Crimea. In the south steppe land like the Baragan Steppe joins the Dobruja to the edge of the Balkan plateau. The whole area of moderate elevation presents a barrier to the Danube and has a flat lagoon coast on the Black Sea.

The rivers of Rumania belong to three sections of the Danube basin—those of the Hungarian plain, of the lower Danube, and of the delta. The main stream flows through the artificial channel at the Iron Gates with increased speed, but below Severin the gradient of the stream is so reduced that the speed of the current depends entirely upon the water supplied by tributaries. In summer this supply is small, and in winter, for a period which may extend to seventy days during a severe season, the river is closed by ice, and the winter harbours at Braila, Galats, Macin, Giurgiu, Flamanda, and Turnu Severin are used. The floods come from the melted snows on Alps and Carpathians or from the early summer rains on the Hungarian and Wallachian plains. The river flows across a wide marshy flat, sometimes two miles across between the cliffs, 160 feet or so high, which edge the Wallachian plain and the scarps which bound the Balkan plateau. The course is braided and the main channel continuously varies. Barges with a capacity of 1000 tons use this section of the great river, but in low water a load of more than 500 tons cannot pass the Iron Gates.

The rivers of north-western Rumania flow to the Danube by way of the Theiss; the Máros with its tributaries and the Számos come from Transylvania, and the Körös from the Bihar Mountains. Their valleys form lines of communication for which their waters are useless. The rivers of south Rumania flow from the Carpathians; some, like the Olt, break across the mountain-chain; others, like the Arges, drain only the southern slopes.

The deltaic rivers flow from the Moldavian Carpathians mainly by way of the Sereth and Pruth. The delta is the finest example of its kind in Europe. The river bends round the Dobruja massif at Galatz, and, with an impetus gained from the Sereth and Pruth, flows across an area of gradually increasing width eastwards; sometimes it covers the whole district, at others it is confined to the Kilia, Sulina, and St. George distributaries. The navigable channel follows the Sulina and has been regulated and straightened.

The Danube is spanned by two bridges—one at Turnu Severin, originally built by Trajan, Emperor of Rome, in 105, and connecting north-east Servia with western Rumania; the other, a new railway bridge opened at Černavoda (Chernavoda) in 1895, to carry the line which links Bucarest with the Black Sea port and seaside resort of Constanta (Constantsa).

The climate of Rumania is, on the whole, continental in type, especially in Transylvania. Winters are cold,

snow falls in November on the plains and lies for about three months. Spring and autumn are short seasons, and summer is hot with cool nights. The rain, which falls most heavily on the higher ground, comes mainly in the short spring and early summer. The east, Bessarabia, and the plains of Munteria are less rainy than the plains farther west, and in some areas the lack of rainfall causes steppe conditions as in the Dobruja and Baragan. Moldavian Carpathians act as a rain-collector, and west of them occurs, in the basins of the upper Olt, the driest areas in Transylvania. The rain-bearing winds blow from the Black Sea. Weather variations are controlled by the local topography, and also by the changes in the position and extent of the permanent winter highpressure system of Russia. Cold, dry, severe winters, with frozen rivers and crisp snow, occur when the high pressure extends from Russia over Central Europe; damp, foggy winters, with ice-free rivers, are due to the relative weakness of the high-pressure system, for then cyclonic storms penetrate Rumania from the Mediterranean area. During severe winters the crivet blows from the northeast or east over Wallachia, the nemere in eastern Transylvania from north-east or east, and the kossava from the south-east across the Banát.

The alpine vegetation of the Carpathian and Bihar Mountains has been mentioned; at lower levels all the mountainous areas are clothed with coniferous forests. Most of the Transylvanian basin and the foot-hills are covered with deciduous forest, while the plains are steppes treeless in south Bessarabia, the Dobruja, and Baragan, and with some trees where the rains fall more frequently. Karst characteristics occur in the foot-hills of the eastern Banát and in the Bucegi district. Marsh vegetation is found near many of the rivers. Willows,

tamarisks, and reeds flourish amid the countless channels in the braided course of the Danube. Here wild duck, wild geese, pelicans, coots, herons, storks, and plover congregate, while sturgeon, sarda, salmon, and pike are caught in the waters. Wild boars and wolves live in the forest, and the bear is occasionally seen.

The chief mineral wealth of Rumania lies in petroleum, although coal, iron, gold, salt, copper, and manganese are found. The oil-belt occurs on the outer foot-hills of the Carpathians as in Galicia; the chief field is at Prahova round Ploesti; other fields are at Dambovita, Buzau, and Bacau. Oil, oil-residues, lignite from the Carpathian foot-hills, and coal from Petroseni and the Banát are the chief fuels in use. The richest gold area in Europe is in the valley of the Aranyos (Golden River) in Transylvania. Salt is mined on both flanks of the Carpathians. Iron is found in Transylvania and the Banát, and gives rise to metallurgical industries at Huniedoara and Reshitsa-Anina. Natural gas occurs near Turda in the Máros valley, Transylvania, and will provide additional fuel, especially during the period of rehabilitation of the oil industry after the wholesale destruction of the oil-fields during the Great War.

#### 2. Government

Rumania is a constitutional and hereditary monarchy. The Crown is hereditary, descends in the direct male line, and is the executive authority. The senate and chamber of deputies form the legislature. Ministers who form a cabinet accept responsibility by countersigning royal decrees. A prefect, receiver of taxes, and a civil tribunal form the local authority for each of the seventy-seven districts into which the country is divided.

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Effective government rests with the king, the chief politicians, and the State officials.

## 3. People

Just as the area of Rumania has been more than doubled, so with the population, which numbers some 18,000,000. The bulk of the people are Rumanians. In eastern Transylvania and in neighbouring parts of Moldavia there is a compact mass of Magyars (Szeklers and Changer) who do not altogether share in the political aspirations of the Magyars of Hungary. In south Transylvania and in the Banát Saxons and Swabians are descended from Germans settled in these areas centuries ago; in Bukovina and Bessarabia are colonies of Germans sent thither as a cultural element at a later date.

In the Dobruja there are large numbers of Turks, Greeks, and Bulgars in addition to the numerous Rumanian population. The country includes about half a million Jews. Religious toleration is laid down in the constitution, and Jews, Mohammedans, Calvinists, Uniates, and Roman Catholics suffer no legal hardships although they do not adhere to the State Church, which is Greek Orthodox with merely a nominal subservience to the Patriarch as a titular head. Gipsies are smiths or tinkers in the villages, carpenters and masons in the towns.

# 4. Industries, Commerce, and Communications

Old Rumania is pre-eminently an agricultural region. Her rich, loamy plains make her the rival of the most favoured parts of Russia in the production of wheat and maize. Wheat, together with maize (which is the staple food of the people), flour, and small quantities of the

usual cereals of temperate regions constitute in value fully 90 per cent of the total annual exports of the country. In agriculture, as in so many other departments of national endeavour, the people of Rumania, encouraged, helped, and directed by an enlightened and liberal-minded Government, have made rapid progress. In 1862 not more than 20 per cent of the area was cultivated. That was one year after the union of the two principalities into one kingdom, and two years after they had shaken off the last shred of Turkish authority. Thirty years later—the space of one generation—they had brought fully one half of the surface under the plough.

In 1864 the Government carried a revolutionary Land Act, whereby the peasant cultivators are being gradually changed into peasant proprietors through the enforced sale by the boyars, or great landed proprietors, of a certain proportion of their domains. Nevertheless a form of the métayer system is still in existence in both Moldavia and Wallachia.

Forests cover about one-sixth of the area, more particularly on the slopes of the Carpathians—fir, beech, ash, elm, oak, and among the Danubian marshes, willows and alders. The State, which owns nearly one half of all the forest regions, not only controls the felling of the trees but takes pains to secure systematic replanting in the Dobruja and elsewhere. Swine and goats range the forests in large herds.

The rest of the country is principally pasture-grounds—for cattle between the Pruth and the Sereth in Moldavia, for sheep in the mountainous parts of Wallachia, and for horses in Moldavia. Wool is a valuable export. Wines of good quality and with some bouquet are grown and made on the foot-hills of the Carpathians, and in the

southern provinces of Moldavia. Tobacco is also, thanks to Government encouragement, a rapidly growing industry. Large supplies of damsons and other fruit are grown, and from the damson a native brandy is distilled in considerable quantities.

Maize is the chief cereal of the hilly regions. Most of the farm-work is carried on by peasant proprietors who live on self-sufficient farms which embrace market-gardens, orchards, and carry a few domestic animals. Haricot beans, rather than potatoes, are a chief article of diet. Wheat is the cereal of the plains. It is grown extensively on the estates of large proprietors, who devote their attention solely to this crop. Here the capitalist sank wells, reclaimed marshes, and adopted machinery and extended wheat cultivation into such steppe regions as Baragan. Barley, oats, rye, and millet are grown on a much smaller scale. Sheep are reared in large numbers: the system adopted, transhumance, of migration from the lowlands to the alpine meadows, is uniquely developed in Rumania. Cattle are reared on the forest edges.

The new lands of Rumania produce as much wheat, maize, and other cereals, and contain as many sheep, cattle, pigs, and horses, as old Rumania, but the really productive areas are much less extensive; these are the Rumanian portions of the Banát and Alföld on the west, and the steppe land of south Bessarabia on the east. The western areas, the Banát and the plains of Arad, obtain a higher yield of cereals per acre than elsewhere in the kingdom, and these areas form part of the ethnographic border-zone between Magyars and Rumanians, across which the boundary line has been drawn to favour Rumania.

In the Transylvanian basin agriculture is almost entirely domestic; horses, however, are a specialty of the

basin of Fogaras. Horses are specially bred in Bessarabia. Swine are largely reared in the Banát and Bukovina.

Since the Great War Rumania has embarked upon a policy of splitting up the great landed estates among peasant proprietors. Unless some form of co-operative activity is equally fostered this policy will in the long run prove detrimental. Owing to climatic vagaries on the one hand, and the necessity for high crop yields obtained by modern machinery and methods on the other, capital is essential to the Rumanian farmer.

Rumanian commerce is subject to serious limitations. Cereals, chiefly wheat, oil, and timber form the bulk of the exports, and textiles and metal goods more than half the imports. Ability to purchase foreign goods depends upon the harvest, itself a fluctuating quantity dependent upon the chances of favourable weather. Neighbouring lands are similar in character and resources, and Rumania trades with distant parts of Europe.

Although the Danube is a useful waterway, these considerations explain why railways and steamers are more important than river barges. Constanţa is the chief port. It has definite advantages, being open throughout the year, while the river ports, Brăila and Galats, are closed by winter ice. Pipe lines and oil storage facilities make it a great exporting port for petroleum. The Cernavoda bridge, the only bridge across the Danube below Turnu Severin, carries the railway to Bucarest with connections throughout the country. The Bessarabian railways, originally on a different gauge, are being steadily adapted to the Rumanian width.

#### 5. Towns

Old Rumania coincides pretty nearly with the ancient Dacia Inferior, a country which was conquered by the

Roman emperor Trajan in 105-106. Into the province which his armies had largely depopulated he gathered colonists from all parts of his wide empire, but the claim of the Rumanians to be descended from these colonists is now generally discredited. The province was abandoned by the empire, and the land for the most part by its people under Aurelian (270-275), and the immigration of its present inhabitants is put by some as late as the thirteenth century. Whatever their origin may have been, they must have been a Romanised people, for their language, which is spoken, not merely in Rumania, but by about as large a population elsewhere, in Transylvania, Bukovina, and Bessarabia, as well as in some parts of Servia and other parts of the Balkan Peninsula, is descended from the Latin, though much modified by Slavonic influences.

Bucarest, or Bucuresci, which, as a human settlement, traces its history back into a dim antiquity, occupies a central position in the great Wallachian plain, about midway between the Carpathian passes and the lower Danube, in a position to command the chief routes between southern Russia and the south of Hungary, and the States of the north of the Balkan Peninsula. It was early, in consequence of this situation, a populous place and an entrepôt of trade for the Balkan States. From the fourteenth century down to the end of the eighteenth, Bucarest had more than a fair share of vicissitudes in the frequent wars between the Turks and their halfindependent vassals, the hospodars (rulers) of Wallachia. For a long period, previous to 1698, it divided with Tirgovište (Tirgovishte)—a town some 50 miles nearer the Carpathians in a north-west direction—the honour

<sup>&</sup>lt;sup>1</sup> Pronounced Bukuresht. Both forms here given are used in Rumania. Pop. by census of 1894, 232,000; 1912, 341,321; (1920), 346,000.

of being the capital of the principality. Bucarest has been in recent centuries the victim of repeated misfortune. Since 1789 it has been visited by earthquakes, fires, inundations, and pestilence. Consequently, until the founding of the modern kingdom of Rumania, its architectural pretensions were of an insignificant character. Nevertheless, since the middle of the nineteenth century, it has banished a great part of its Oriental meanness and squalor, and is being energetically furnished with handsome new buildings of modern elevation and design. Since being chosen as the seat of Government and royal residence for the new kingdom, it has been made the point of convergence of the principal railway lines in the country.

Brăila 1 and Galats 2 (Rumanian Galați) are rival ports near the head of the Danube delta. Galats grew rapidly after the establishment of the Rumanian kingdom, and became the principal corn-exporting port of the country. The newer residential half of the town stands on bluffs above the river, not far from the confluence of the Sereth. The older commercial town clings to the margin of the river at their feet, and is subject to inundations. Brăila, which lies some 12 miles nearer Bucarest, is rapidly supplanting Galats as the chief river port for Rumanian grain.

Jassy,<sup>3</sup> or Yassy, Rumanian Iasi (Yash), the second city of the kingdom, owes its importance partly to its former distinction as the capital of the principality of Moldavia, partly to its situation as the point of gravitation for the trade of a wide agricultural country. In the latter capacity it acts as a sort of feeder to Galats,

<sup>&</sup>lt;sup>1</sup> (Brăila), estimated pop., 1894, 51,000; pop. 1920, 66,000.

<sup>&</sup>lt;sup>2</sup> (Galats), estimated pop., 1894, 57,000; pop. 1920, 74,000.

<sup>&</sup>lt;sup>3</sup> (Jassy), estimated pop., 1894, 66,000; pop. 1920, 76,000.

with which it is connected by railway. Moreover, it stands only 10 miles from the west bank of the Pruth which is navigable for grain-boats to a point some 12 miles higher up. The town has been for the most part built since 1827, when it was nearly burned down, and has figured frequently in the wars between Russia and Turkey during the eighteenth and nineteenth centuries. Turnu Severin, standing on the Danube at the end of Trajan's bridge, is, however, quite a modern town, founded in 1835 on the site of the old one, which was destroyed by the Turks in the fifteenth century. A railway bridge here crosses the Danube. This town and Giurgiu<sup>2</sup> (Jurju), or Giurgevo, originally a Genoese fort (St. George), are the chief river ports west of the longitude of Bucarest. Ploesti 3 (Ploeshti), lying between Bucarest and the Carpathians, is the centre of the petroleum industry.

In Transylvania proper the towns are situated in the valleys. The most important is that of the Máros, which contains in its upper part the town of Osorrei (Máros-Vásárhely), and lower down in the same expansion the two towns of Aiud (Nagy-Enyed) and Alba Julia (Karlsburg; Hungarian Gynlafehervár), the latter built in the fourteenth century on the site of the ancient Apulum, an important point of convergence of roads in the Roman province of Dacia. Farther north, where the meridional valley of the Kis Számos is joined from the west by the narrow but well-marked and important line of valleys formed by the Sebes (swift), Körös, and the Nadas (a tributary of the Kis Számos), stands Cluj<sup>4</sup>

<sup>&</sup>lt;sup>1</sup> (Turnŭ-Severin), estimated pop., 1894, 16,400; pop. 1920, 24,000.

<sup>&</sup>lt;sup>2</sup> (Giurgiu), estimated pop., 1894, 16,000; pop. 1920, 21,000.
<sup>3</sup> (Ploesti), estimated pop., 1894, 37,000; pop. 1920, 57,000.

<sup>&</sup>lt;sup>4</sup> (Cluj), pop. (1850), 16,900; (1869), 26,400; (1890), 32,800; (1910), 49,000; (1920), 61,000.

(Klausenburg, in Hungarian Kolozsvár), the capital of Transylvania, on the site of what appears, from the remains discovered there, to have been a Roman colony. The valleys indicated are both now followed by railways, and there is an easy road and railway route leading south-eastwards to the valley of the Máros. Another important valley is that of the upper Olt, continued westwards by that of the lower Cibin, lying immediately to the north of the main chain of the Transylvanian Alps. In this valley on the Cibin stands Sibiu (Hermannstadt; Hungarian Nagy-Szeben), a German colony founded in the twelfth century. A few miles to the south-east of this town the Olt pierces the Carpathians in the defile known as the Roteturm 1 Pass. Farther east, to the north of the Tömös Pass (3445 feet), lies Brasov 2 (Kronstadt; Hungarian Brasso), at the foot of the Carpathians on the margin of a detached plain formerly known as the Burzenland. Another detached valley, to the west of that of the Olt-Cibin, now containing at its lowest point the town of Hateg at its northern extremity, is interesting historically from having contained, in ancient times, Ulpia Trajana, the capital of the province of Dacia, at the south-western angle of the plain and at the eastern end of the road leading across the pass of the Iron Gate (2150 feet), by which it communicated with the valley of the Temes and (southwards) with the Danube. In the Banát the chief town is Temisioara 3 (Temesvar), a great traffic centre by road and railway. On the edge of the Alföld lie Arad,4 on the

<sup>&</sup>lt;sup>1</sup> German; in Rumanian Turnu Rosu, both meaning "red tower."

<sup>&</sup>lt;sup>2</sup> (Brasov), pop. (1800), 21,600; (1869), 27,800; (1890), 30,700; (1920), 41,000.

<sup>&</sup>lt;sup>3</sup> (Temisioara), pop. (1850), 17,700; (1890), 39,900; (1920), 72,000.

<sup>4 (</sup>Arad), pop. (1850), 22,400; (1890), 42,000; (1920), 63,000.

Máros; Oradea Mare<sup>1</sup> (Nagy-Varad or Gross Wardein), the head of barge navigation on the Körös; and Satmar (Szatmar Nemeti), on the Számos. Cernaüti<sup>2</sup> (Czernowitz), a university town on the Pruth and the capital of Bukovina, was formerly a centre of German culture on the Austrian frontier. Chişinau<sup>3</sup> (Kishinev) is the capital of Bessarabia.

¹ (Oradea Mare), pop. (1850), 22,500; (1890), 38,600; (1920), 64,000.

<sup>&</sup>lt;sup>2</sup> (Cernauti), pop. (1869), 34,000; (1890), 54,000 (the commune, the truly urban population, being about 12,000 or 13,000 less); (1920), 87,000.

<sup>&</sup>lt;sup>3</sup> (Chişinau), pop. (1920), 114,000.

# CHAPTER XVII

### THE BALKAN PENINSULA

# 1. Boundaries—Coasts

UNLIKE Italy and the Iberian Peninsula, the Balkan Peninsula is not shut off from the continent of Europe by a lofty mountain barrier. It does, however, possess a clearly defined line of demarcation in the river Danube and its large tributary the Save. On the north these streams are bordered by the wide plains of the Alföld and Rumania. On the south of them lies the mountainous region of the Balkan Peninsula. It impinges upon the steppes of Eurasia in the north-east, marches with central Europe on the north-west, and has Mediterranean affinities along its coastal sills. Furthermore, the channels connecting the Black Sea with the Aegean represent geologically recent fractures of the surface of an ancient tableland of which relics now remain in Thrace on the west and in Western Anatolia on the east.

Politically the peninsula includes the states of Greece, Bulgaria, and Albania, the major portion of Yugo-Slavia and the Dobruja portion of Rumania, and the relic of Turkey in Europe. Its civilisation embraces the modern modified forms of three earlier types. In the north and north-west is the patriarchal system due to the south Slavs, a system to be described in the chapter

on Yugo-Slavia; in the south and south-east is the modified Byzantine civilisation, to be described under Greece; and in the east the Turkish civilisation, to be described in the chapters on Bulgaria and Constantinople.

The existing political situation has in it certain lines of weakness, particularly in relation to Bulgaria and its need of a southern seaport; to Yugo-Slavia and its desire for an outlet to the Ægean Sea; and to the embroilments of Greece in Asia Minor. Furthermore, although the Turk has only a precarious foothold in the Europe of to-day, yet his foot is still there and Europe is not yet free from the difficulties which have haunted it ever since the irruptions of Islam. The Balkan wars left behind them certain legacies of distrust which the vicissitudes of the Great War did not remove. These influences have quite recently brought about an extension of the Turkish area so that the political boundary between Greece and Turkey runs for the moment (1924) along the Maritsa, leaving the eastern side of the lower Maritsa valley still in Turkish hands.

The east side of the peninsula overlooks the Black Sea. The coast there is low and marshy, with large shore lagoons (Rasim and Sinoe) in the Dobruja, but rocky towards the south—throughout its entire length uniform and inhospitable, with hardly any good bays (the gulf of Burgas being the one dubious exception) and no islands. The south side is washed by the Sea of Marmora and the Ægean Sea. But between the Black Sea and the Sea of Marmora the boundary is formed for a distance of 20 miles by the narrow strait of the Bosphorus: a gap due to a primary convulsion of nature, subsequently enlarged by the erosive action of the sea currents. At its widest part it is 3 miles

<sup>&</sup>lt;sup>1</sup> See Introduction, p. 8.

## THE BALKAN PENINSULA



across, and its narrowest under half a mile. Its shores are bold and rocky, more particularly at the Black Sea end, and exhibit a close parallelism along the line of their rupture, headland and gorge facing each other with close exactitude. The shores of the Bosphorus furnish one of the most picturesque panoramas in the world; a remark which applies with special truth to the southern end, where a short side arm penetrates westwards, the Golden Horn. All along the shore, and climbing up the adjacent heights, buried in evergreen vegetation, follow in quick succession a multitude of Oriental palaces, mosques, churches, castles, country houses, presenting a scene remarkable for architectural variety combined with romantic beauty of situation.

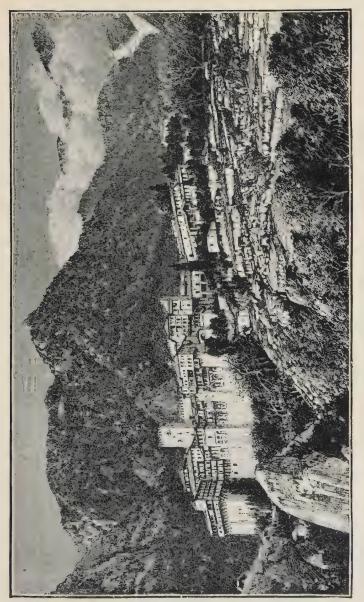
The coast of the Sea of Marmora is steep and destitute of good natural harbours throughout its entire lengtha distance of 180 miles. The Dardanelles or Hellespont, which supplies a waterway between the Sea of Marmora and the Ægean, is precisely similar to the Bosphorus in the manner of its origin, as well as in its typical characteristics. It is, however, longer (40 miles) and wider ( $\frac{3}{4}$  to  $4\frac{1}{2}$  miles), and its shores are not so high. The Hellespont is famous in history and literature. It was at its narrowest part that Xerxes, the Persian, poured his invading hosts over two separate bridges when he threatened the independence of Greece in 480 B.C. Near the same spot, opposite Abydos, Alexander the Great led his armies in 334 B.C. when he set out on his dazzling march of Asiatic conquest. Near the same spot the Turks swarmed into Europe in the fourteenth century. This narrow seaway is further consecrated to the romantic by the story of Hero and Leander; Byron also swam across it in the early part of the nineteenth century.

<sup>&</sup>lt;sup>1</sup> See also below, p. 737.

The southern, i.e. the Ægean, coast of the peninsula exhibits a marked difference from the coasts which have been just characterised. It is broken by a pleasing alternation of lowlands with higher ground, and there are river deltas and gulfs and useful harbours to add to the diversity of feature. At the eastern end are the deep Gulf of Xeros (Saros) and the delta of the river Maritsa; in the west the Gulf of Kavala and the Chalcidice peninsula.

The peninsula of Chalcidice is a hilly region, well wooded and well watered, with iron and argentiferous lead mines (at Madenochoria), worked by the ancients. It sends out to the south-east and south three long narrow fingers, separated by the gulfs of Agion Oros (Sacred Mountain, i.e. Mount Athos) and Kassandra, and has on its west side the large but shallow gulf of Salonica. Of its three prolongations Kassandra, the westernmost, is low and bare, and little cultivated. The middle finger, Longos (under 2700 feet in height), is rugged in contour and covered with thick firwoods. The third finger terminates in the bold white marble headland of Athos, the holy mountain, with its cluster of monasteries belonging to the Greek Orthodox Church. The whole, towering steeply above the sea to an altitude of 6350 feet, forms a conspicuous and easily recognisable landmark for seamen all over the waters of the northern Ægean, being visible immediately a vessel emerges from the Dardanelles. This finger also is well-wooded, and fenced off from the root of the Chalcidice by a transverse ridge of outcropping gneiss.

The Gulf of Salonica is being slowly filled up by the alluvium brought down by the rivers which empty into its northern extremity—the Vardar, Vistritsa, and others of smaller volume. On its west side begins the Pindus



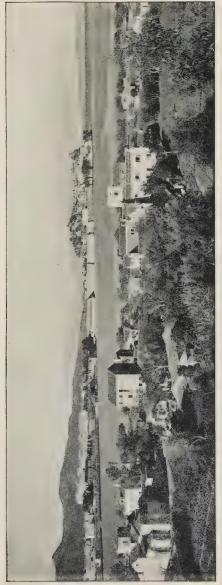
MONASTERY OF ST. PAUL-MOUNT ATHOS.

or Greek extension of the great Balkan peninsula, and stretches thence in a south-south-east direction for a distance of 300 miles. Generally speaking, the coasts of this secondary peninsula are lofty and mountainous. and consequently inhospitable; but they are cut into by several long indentations, many of which abound in good harbours and sheltered anchorages. The whole of the eastern coast of Thessaly, and also of the island of Eubœa, is rugged and unapproachable. Over against the southern plain of Thessaly the sea enters (from the south) into the almost landlocked basin of the Gulf of Volo, and thus furnishes a useful waterway and outlet for the products of that fertile region. Beyond the southern extremity of Eubœa projects, in a parallel direction with it, the peninsula of Attica, and still farther to the west, the peninsula of Argolis. Between these two peninsulas the Gulf of Aigina, or the Saronic Gulf, penetrates 40 miles in a north-west direction. Its shores are broken into numerous good harbours, and its waters studded with a multitude of green islands, the "Isles of Greece." Then, again, from the head of the Gulf of Nauplia, on the west side of the peninsula of Argolis, the coast right round the Peloponnesus, with its three separate peninsulas, separated by the Gulfs of Marathonisi and Korone, presents again a line of repellent cliffs, unsheltered by islands, and unprovided with natural ports.

The west coast of the Peloponnesus has, however, a very different character. There the districts abutting upon the sea are low alluvium, backed by mountains at some little distance inland. Then comes the long narrow Gulf of Corinth, shut in on north and south by mountainous regions, having an average altitude of 6000 feet, and covered with snow for three-quarters of the year.

plains with the detritus they roll down. The northern shore swings in and out round a number of little bays, and is accompanied by a string of small stony islands. Outside the Gulf of Patras, or outer portion of the Gulf of Corinth, and athwart its entrance, lie the southern islands of the Ionian For group. several miles north of the Gulf

Its southern shore is seamed by mountain torrents, which have built up several little outjutting



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of Patras the coast is again high and rocky, though greatly diversified in outline. Then it

recedes inland, forming the almost landlocked Gulf of Arta. But the shores of this gulf, although possessing a greatly broken outline, are neither thickly inhabited nor endowed with a seaport of any commercial importance. This is chiefly attributable to the character of its northern margin, where various short streams have formed a long expanse of marshy lagoons, rich in fish and haunted by vast flocks of waterfowl, but at the same time inimical to human settlement because of its malarial nature.

Opposite the large island of Corfu, some 50 miles north of the Gulf of Arta, the coast, which up to that point has curved in and out of several broad, open bays, rises sheer from the deeps of the sea into the lofty and precipitous Akrokeraunian Mountains (6300 feet), a rocky district which mariners dread, not the less in that it is almost entirely uninhabited. Northwards again from Cape Glossa, in which the Akrokeraunian Mountains terminate, and behind which lies the Bay of Avlona or Valona, the coast is generally low as far as the frontier of Montenegro. Along this stretch of 170 miles several rivers run out into the sea, their accumulations of detrital matter forming a succession of deltaic projections, between which in more than one place the shore becomes occupied with swampy lagoons. The sea here immediately contiguous to the land is shallow and strewn with sand-hanks

The coasts of Montenegro and Dalmatia are almost entirely built up of bare, steep limestone mountains, from which long, narrow peninsulas jut out at intervals, and off which lie a number of long, narrow islands, all having one common direction, namely, from north-west to southeast. These peninsulas and islands, together with other rugged indentations of the coast. form numerous natural

harbours of more or less utility for commercial purposes, most of them belonging politically to Yugo-Slavia

### 2. Relief of Land-Passes

The whole of the Balkan or, as it is also sometimes called, the Illyrian peninsula is of a very mountainous character; but the mountains are so diversely distributed over the surface that only two or three continuous ranges of any considerable length can be made out. One of these is the range from which the peninsula takes its ordinary name—the Balkans. These mountains, known by various local epithets, but generally in Turkish as Kodža (Koja) Balkan ("the principal mountains"), in Servian as Stara Planina ("the old mountains"), are now taken to include the range or elevated escarpment which girdles Bulgaria on the west and south. Thus they stretch in a sharp curve from the Danube, near Vidin, to the Black Sea coast, where they terminate in the monastery-crowned Cape Emine, a name in which some authorities discern a form of the ancient Hamus, the classical name for the Balkans. The range is narrow (12 to 30 miles), with a steep face towards the south, but an unusually gentle descent north to the Danube. It is highest in the middle, where the mean elevation is 4500 to 6500 feet, with single summits 600 to 1000 feet higher, e.g. Jumrukčal (Yumrukchal, 7790 feet), Kadimlia, 7480 feet. The predominating form of summit is the flat, rounded dome. The harshness of the mountain features is further softened by the forests of oak, beech, and fir which drape the flanks of the range. The west Balkans, which separate Bulgaria from Serbia, strike north and south, and reach an average altitude of 4500 feet, and their maximum in Midžur (Mijur, 7105 feet). The eastern Balkans decrease in elevation as they approach the Black Sea, at the same time broadening out and dividing into parallel chains. On the south the main chain is accompanied along its east-west strike by lower parallel ranges known as the Anti-Balkans or Karaja Dagh; highest summit 5160 feet in the Sredna Gora. Between the two the upper course of the Tunja, the principal tributary of the Maritsa, gives fertility to a string of small basins or depressions, e.g. Kazanlik, Sliven.

From the other, i.e. the north side of the Balkans, the low, flat tableland of Bulgaria slopes gently towards the Danube—treeless and relatively waterless, with thinly scattered villages and the rivers deeply sunk in the limestone. In the east, towards the Dobruja, the country resembles a steppe region. There trees are so scarce that the ordinary fuel of the inhabitants consists of bricks of mingled dung and straw. The rivers across the plateau not being navigable, and the region generally inhospitable, there is little communication in a north-south direction.

On the south of the Balkans the Anti-Balkans over-look the valley of the Maritsa (the ancient Hebrus), the most considerable stream of the eastern half of the peninsula. At first this river, which has a total length of 300 miles, flows east, with an inclination to the south; but finally it circles round the eastern extremity of the Rhodope Mountains, and going southwards, seeks the Ægean Sea. Its drainage basin is shut off from the Black Sea by the Istranja Dagh, which lies parallel to the coast. The watershed between the two seas runs so close to the Black Sea as to be in one district only 25 miles distant.

Alongside the Sea of Marmora, farther to the south, stretch the Tekir Dagh (highest point, Pyrgos, 3020 feet)

and the Kuru Dagh, which are continued south-west—the former in the peninsula of Gallipoli (mean altitude 800 feet), and the Ægean islands of Imbros, Lemnos, and Agiostrati (Turkish Bozbaba, "grey father"), the latter in the island of Samothraki or Samothrace.

On the south, the valley of the Maritsa is shut in, as with a gigantic wall, by the broad and lofty range of the Rhodope Mountains. These are highest in the west, where their mean elevation attains 6500 feet, and gradually sink as they advance eastwards. They are in great part well wooded: nevertheless, in very many places the woods are overtopped by sharp, rugged pinnacles, and massive crowns of rock, broken off in steep precipices. All this region, owing to its great average altitude the length of the crossings at high elevations, and the torrential character of the streams which plunge down its sides, is practically impassable, the only paths that exist being mere bridle-tracks. At the north-west extremity of the Rhodope Mountains stand the mountain buttresses of Muss-Alla and Rila (incorrectly Rilo) Dagh, two of the loftiest elevations in the peninsula, the former being 9615 feet high, the latter 8790 feet. Between these and the outer elbow of the Balkans rises the imposing syenite mass of Vitoša (Vitosha, 7515 feet), which exhibits traces of volcanic action and contains an immense quantity of magnetic ironstone. In these mountain groups with their spurs we may discern a connecting link between the Balkans and the Rhodope Mountains, as well as a knot or centre of radiation for the higher regions of this part of the peninsula.

In these predominatingly mountainous regions of the Balkan Peninsula, the position and relative practicability of the passes connecting basin with basin are factors of the highest importance in shaping the political, social, and economic relations of the inhabitants. The great highway of the peninsula is that which connects Constantinople, the gateway between Europe and Asia, with Belgrade, on the Danube, which gives entrance to the plains of Hungary and the roads leading to western, middle, and northern Europe. This great historic highway passes up the valley of the Maritsa, and down the valley of the Serbian river Morava. At the head of the two valleys, deeply sunk in the mountains which girdle them round, that is, in the cross spurs connecting the Balkans and the Rhodope range, nestle the little basins of Samokov (3075 feet), Kustendil (1660 feet), Radomir, Sofia (1800 feet). The last named, the basin of Sofia, is the one through which the great road passes. At one point, between Tatar Pazardjik and Ikhtiman, known since the fifteenth century as Trajan's Gate (2765 feet), the mountains hem the road in so narrowly that the Romans were able to barricade it across with a thick wall, pierced by an actual gateway. In antiquity this was considered to mark the division between east and west. between Illyricum and Oriens. Its ancient name was Succorum claustra. The modern railway, which closely follows the ancient route, avoids this narrow spot by ascending a side valley of the cross range. On the other side of the range, going down into the basin of Sofia, the road traverses the Pass of Vakarel (2445 feet). Communication between the basin of Sofia and the upper valley of the Nisava (Nishava), the principal tributary of the Serbian Morava, is facilitated by the Pass of Dragoman (the ancient Clausura secunda), at an altitude of 2380 feet.

From this same central basin of Sofia roads lead south, over the west shoulder of Vitoša (Vitosha), by the Pass of Vladaja (2980 feet), to the valley of the river

Struma; south-west over the Pass of Güveševo (Güveshevo, 4595 feet) into the valley of the Vardar; north through western Bulgaria over the Pass of Ginci (Gintsi, 4730 feet) to the Danube at Lom Palanka; and north-east over the Baba Konak Pass (3240 feet), also in western Bulgaria. The railway from Sofia to Pleven (Plevna) follows the valley of the Isker through the Balkan mountains.

The Balkans, principally in consequence of their gentle northern declivity, are traversable by thirty or more driving roads. The most used, and the most important strategically, is the Šipka (Shipka) Pass (4375 feet), famous for desperate fighting between the Russians and Turks in 1878. The road ascends from the rolling, wooded, but poor country of Gabrovo, and goes down on the south into the rose fields of Kazanlik, which have acquired a world-wide repute from the attar of roses there manufactured on an extensive scale. The valley of Kazanlik, protected from south-westerly gales, is covered with rose gardens and fields of corn, interspersed amongst which are numerous Osmanli (Turkish) hamlets, watered by sparkling rivulets and shaded by clumps of walnut trees, their red-tiled roofs and white domes and minarets having an irresistible attraction for the eye of the wayfarer. The two highest passes over the range are the Rabanica (6285 feet) and the Rosalita (6160 feet).

The eastern section of the Balkans is also crossed by several passes, such as "The Iron Gate" (Demir Kapu), 3600 feet high, and the Dobral (1465 feet), farther to the east, both connecting Šumen (Shumen) with the east quarter of Eastern Rumelia.

The only other well-defined range amongst the architectural mountain systems of the peninsula, both as regards length and height, is that of the Dinaric Alps.

the main chain of which, stretching from north-west to south-east, divides Dalmatia from Bosnia and Herzegovina. The main features of the region occupied by these mountains are similar to those described under Yugo-Slavia, in the section on the Karst. The loftiest summit in the chain is Mount Dinara, 6010 feet high, a mass of bare, dazzling white chalk, not, however, the soft chalk of north-western Europe, but the hippurite limestone mentioned in the Introduction as characteristic of the Cretaceous system in southern Europe.

The determining geographical features of the middle portion of the peninsula are the valleys of the Morava and the Vardar. The former river flows north into the Danube, the latter south into the Gulf of Salonica. The watershed between them is relatively of such insignificant elevation as to be scarce perceptible; indeed, the head-streams of the two rivers overlap and interpenetrate. Here, then, nature has made another clearly marked highway, hardly inferior in strategic and commercial importance to the great historic route between Belgrade and Constantinople. This too, like it, has Belgrade for its starting-point at one end, and, being now traversed from end to end by a railway, it seems destined to play an increasingly momentous part in the future destinies of the peninsula.

Both valleys are, however, narrow, and are bordered almost throughout their entire courses by rugged mountainous country, which, generally speaking, thrusts well-nigh insuperable difficulties in the way of direct communication between the eastern and the western parts of the peninsula. Eastern Serbia, the crumpled region pressed in between the Morava and the northerly wing of the Balkans, is invaded by spurs of the Carpathians, the Balkans, and the Rhodope Mountains, amongst

which the peak of Midžur (Mijur, Balkans) towers up to 7105 feet, Stresar (Streshar, Rhodope) to 6330 feet, and Mount Lisac (Lisats, Carpathians) to 4770 feet. On the west of the river, between it and the Bosnian offshoots and spurs of the Dinaric Alps, the mountains would appear to group themselves, in short ranges, round two or three knots or radiating centres. They are in many places cleft by deep narrow glens, along which race the torrents that feed the western arm of the Morava and those that flow north into the Danube. On the extreme western border of the country the Povlen Planina mounts up to 4175 feet. South of it, and close to the meeting-point of the frontiers of Kossovo and Bosnia, is the Alpine region of Zlatibor (3000 feet). Still farther south, as well as much farther to the east, we have the ranges of Golija (6500 feet), Jastrebać (Yastrebach, 5150 feet), and Kapaonik, culminating in Suvo-Rudiste (Rudishte, 6900 feet), all meeting together near one point. Nearly all these mountains of western Serbia are well-wooded and rich in pasture land. The Kapaonik Mountains, which separate the modern kingdom of Serbia from the region known as Old Serbia, have for centuries been a mountain fastness of the Serbs, a fostering home of the spirit of national independence, a purpose for which its almost inaccessible glens pre-eminently fitted it. The monastery of Studenica (Studenitsa), about 25 miles north-west of Mount Suvo-Rudiste (Rudishte), may perhaps be called the nursing-mother of Serbian freedom.

The most definite knot, however, is the Shar Dagh with Lyubeten, 8235 feet, and Babašnica, 8166 feet, with drainage to the Adriatic by the Drin, to the Ægean by the Vardar, and to the Danube by the Morava and its affluent, the Ibar.

For 50 miles of its course the Morava flows in a cañon-like gorge. Mountain walls tower up above its waters to a sheer height of more than 3000 feet (in the part called Momina Clissura), and approach so close together that both the driving-road and the railway track are shelves which have been literally hewn out of the mountain-side.

The basin of the Vardar is broken up into several smaller basins by many short, lofty ranges, some disposed in a north-west and south-east direction, others at right angles to them in a north-east and south-west direction.

The region between the Kapaonik Mountains and the North Albanian Mountains has played a conspicuous part in the history of south-eastern Europe. Kossovo-polje, "the plain of Blackbirds," to give it the poetic name it bears in old Serbian song, was the scene of the overthrow of the last Serbian monarch before the all-conquering hosts of the Osmanli (Turks) in 1389, and again in 1444 of the defeat of the great Hungarian Hunyady Janos by the same redoubtable foe. In the middle of the plain stands the monumental mosque which commemorates Sultan Murad, the victor of 1389.

These north-east and south-west ranges of Macedonia and Albania are knotted at various points with others, which strike from the north-west to the south-east, and stretch in more or less continuous lines from about lat. 45° N. right down to Cape Matapan, the southernmost extremity of Greece. Broadly speaking, these chains are long and narrow, and would appear to have been thrust up into parallel folds or crumplings of the surface by great side-pressure applied from the direction of the Adriatic. The watershed between the Ægean and the Black Sea drainage areas on the one side, and the streams which seek the Adriatic on the other, approaches in some places comparatively close to the west coast, and rises to extremely

lofty altitudes. For instance, it passes along the frontier between Montenegro and Dalmatia, over the crests of Orijen (6220 feet), only 8 miles from the sea, Lovéen (Lovtsen, 5890 feet), 7 miles from the sea, and Rumia (5230 feet), only 4 miles from the margin of the Adriatic.

In the middle parts of Albania, immediately south of the Shar Dagh, the chains have a preponderatingly north-south inclination, and rise with great steepness to altitudes of 5000 to 8000 feet (e.g. Jablanica, 7490 feet; Tomor, 7920 feet; Nerečka (Nerechka) Planina, 7740 feet). Deep sunk in the arms of these steep and lofty mountains sleep the lakes of Okhrida, Prespa, Malik, Vodena, and some smaller sheets of water. Lake Prespa, which is 525 feet higher than Lake Okhrida, drains into the latter by a subterranean channel. Lake Okhrida, in its turn, is drained northwards by the river Drin. The Jablanica (Yablanitsa) are continued southwards in the Pindus Range, the salient orographic feature of northern Greece (Thessaly).

The main lines of communication along the western half of the peninsula follow an east-west, or else an almost due north-south direction. The transition from the valley of the Vardar to the valley of the Morava is so easy, running over a pass which is only 1300 feet above sea-level, as to mark this out naturally for one of the main arteries for communication. At Üsküb, however, about mid-way up the course of the Vardar, another road joins it, coming from the north-west, out of Bosnia. Although the principal connection between those extensive provinces (Bosnia and Herzegovina) and Constantinople, this road is by no means an easy one. For instance, to get round the eastern extremity of the Shar Dagh, it traverses a pass so narrow as to be spanned by a single arched gateway, and immediately above that, between the lower and the upper ends of the short pass

of Kachanik itself, it climbs up some 700 feet. Farther on, it continues for a distance of fully 55 miles (between Novibazar and the Bosnian frontier) at an altitude of more than 3000 feet.

Several short, but steep and difficult, paths lead up from the coast of the Adriatic to the interior, the easiest being that which ascends the valley of the Narenta to Serajevo, the capital of Bosnia. The most difficult country of all is Albania. Nevertheless, the old Roman military road to the Orient, the Via Egnatia, climbs up the valley of the Shkumbi past the town of Elbasan, runs for 15 miles at an altitude of more than 3500 feet. and surmounts a pass of 5855 feet, then, farther inland, after crossing several lofty north-south chains, including one between Okhrida and Monastir of 3810 feet, finally runs down into the plain of Kampania, and so arrives at Salonica. Thence it is continued eastwards to Constantinople along the northern shore of the Ægean. Closely parallel with it the third great trunk railway of the peninsula connects Constantinople and Salonica.

Another route, which is in pretty constant use, notwithstanding its steep gradients and the numerous transverse chains it has to cross, is—again an old Roman road—that which follows the gorge of the river Drin, catching up on the way a branch road from Skutari, and finally descending upon Prizren, at the northern foot of the Shar Dagh. Farther to the south, the valley of the Viosa offers an easier ascent. But the key of southern Albania goes with the possession of the passes of Metsovon on the shoulder of Mount Zygos. There the chief road between Thessaly and Epirus (Yanina) crosses at an altitude of 4900 feet, and the road from Macedonia to Epirus at 4700 feet.

Many of the roads which have been constructed in

the Western Balkans since the commencement of the century suffer in the same fashion as the roads of an earlier date, from the neglect of the inhabitants. In a country without municipalities and with little or no training or experience in public life, there is no consistently regular manifestation of public spirit which leads to the maintenance of roads and bridges. Tempest or flood ruins the culverts and washes away sections of a new road, which has become an ornament to the locality; such a catastrophe is an act of God, and it almost requires an act of God for the catastrophe to be repaired.

Both northern Greece and the Peloponnesus are almost entirely mountainous. The chief exceptions to this statement are the plain of Thessaly, stretching from the Pindus to the Gulf of Salonica, and the plain of Bœotia, consisting for the most part of the former lake of Kopais, besides smaller coast fringes and a few narrow river valleys.

With a bridgehead over against Asia at Constantinople, with a convenient lowering of the Alpine chain as a means of access to the plain of Lombardy and its traffic routes through the tunnels of the western Alps, with the Danube valley-ways all along the north, and with a comparatively extensive coast line, the peninsula should have many seaports and a well-developed railway system. The contrary is, however, the fact. The Adriatic seaboard is not really Balkan, and the harbours are not terminal stations for great routes inland. The valleys of the Vardar and Maritsa are of some service, yet they are not traffic ways comparable with the valleys of the Rhone, Rhine, or Elbe.

Many of the short but lofty ranges of Greece, attaining elevations of 5000 to 8250 feet, are worthy of mention, on account of their ancient celebrity. Such,

for example, are Othrys (modern Hellovo) and Œta (Oitē) in the south of Thessaly, with the famous Pass of Thermopylæ at the farthest extremity of the latter; Olympus, Ossa (Kissavos), and Pelion (Plaisidi) in the east of the Thessalian plain. Olympus, 9750 feet in height, is the highest peak in the whole peninsula. Still farther south are the isolated Mount Parnassus (Lyaknia), Helicon (Zagora), Cithæron. In the Peloponnesus or Morea, in the heart of which lies the highland basin of Tripolitsa (Arcadia), from which short chains run out to the extremities of the minor peninsulas, there rise in the north-west Mount Erymanthos (Olonos) and Cylene (Ziria), and in the south Taygetos, the five principal peaks of which have obtained for it the modern name of Pentedaktylon, "the five-fingered." Many of these Peloponnesian peaks soar up to 6000 feet, and Mount Elias, the highest of all, one of the peaks of Taygetos, reaches an elevation of 7870 feet.

Greece is perhaps more subject to earthquakes than any other region in the Mediterranean, with the single exception of the south of Italy. The Gulf of Corinth is especially subject to earthquake shocks. They generally extend throughout its entire length from east to west, are frequently of great violence, and manifest themselves strongest on the soft alluvium of the south coast of the gulf. The isthmus of Corinth is indeed almost constantly in a state of tremor. Corinth itself has suffered terribly at three different times, 77, 522, 1858. Another centre of disturbance, entirely unconnected with the movements at Corinth, is Messenia, the south-west corner of the Peloponnesus. Upheavals are, however, nothing like so frequent there; but they too, like those of Corinth, are severest in the loose alluvial coast-belts. In 1886 this part of the country was the scene of one of the most

violent earthquakes Greece has ever experienced, Pylos and Koronē being the places specially affected. In addition to these, there are at least five other independent centres of seismic commotion—namely, the ancient Locris, north of the Gulf of Corinth; the lower valley of the Acheloos up towards Prevesa, at the northern side of the entrance to the Gulf of Arta; the Cyclades; Bœotia from Chalkis (in Eubœa) to Thebes; and the plains of Thessaly.

Greece abounds in hot springs, almost all of them in maritime districts. Salt is their principal chemical ingredient, but sulphur also is very common.

# 3. Natural Regions

The foregoing description of the relief of the peninsula naturally prefaces a summary of the main geographical regions. Essentially the peninsula comprises two main sections, the continental core and the Hellenic peninsula, separated by a line from the Gulf of Arta to the head of the Gulf of Salonica.

The Hellenic peninsula is characterised as the major portion of the Balkan Peninsula which has a Mediterranean climate; otherwise only the coastal fringes of the Ægean and the Adriatic pertain strictly to the Mediterranean region. Rainless and hot summers and warm, moist winters with a typical maquis vegetation, together with a pronounced limitation of the area suitable for cultivation to the exiguous lowlands, drive the people to a life based upon the sea, where fishing, trading, and seafaring are the dominant occupations. The relative excess of elevated land limits land communications, restricts each coast town to a tiny hinterland, and makes for separatism and a tendency towards

the maintenance of the city state an isolated, semi-independent unit.

The remaining coastal sills, from the Gulf of Arta to Trieste and from Salonica to Constantinople, are transition areas. Both are Mediterranean in character and are modified to some degree by the continental core behind them. The western or Adriatic area with its fringe of islands, the coast lands of Albania and Yugo-Slavia, has convenient harbours; but except at Fiume and Trieste, tiny hinterlands, the towns are Hellenic in character. The eastern or Ægean area is an alternation of highland and extensive coastal plain where rivers from the core mountains find their outlet to the sea. These plains are gateways to the core, and the cultivation of cereals restricts the range of the olive. Here Slav and Greek influences persist simultaneously, and Byzantine civilisation based on Constantinople dominates the cultural elements of the Thraco-Macedonian littoral.

The continental core is divisible into three northsouth zones, all of which, except for the Black Sea littoral, have a central European climate with extremes of temperature, summer rains and winter snows.

The eastern zone, consisting of Bulgaria and the Dobruja, comprises three regions—the plateau between the Balkan Mountains and the Danube, the basin of the Maritsa and the basins of Sofia, Radomir, and Samokov. The plateau with characteristic loess soil is, in reality, a transition area to the steppe region of Eurasia; it leads naturally across the Danube to the Wallachian plain. The Maritsa basin is the most precise of all Balkan regions; the Balkans and Rhodopes define its limits, and the valley way, a section of one of the dominant traffic lines of Europe, gives it a vigorous life reflected in its crops of wheat, maize, grapes, and mulberries. The Sofia

and other basins are isolated patches of cultivable lowland within an elevated deforested district poor in natural resources.

The middle zone comprises three regions. In the centre is Rashka, Ancient Serbia, where the Shar Dagh is but one element in a mountainous complex, and where fertile alluvial floors of old lake basins yield good crops and the separating ridges are fine pasture. Here is the heart of Balkania with drainage and natural lines of communication to three seas. In the north is a Danubian region comprising several valley units which lead to the east-west line of the Save-Danube; the most precise of these is the Shumadya, the valley of the Morava. Here are forested uplands and fertile valleys noted for plums, maize, and pigs. From Nish to Belgrade is a second section of the great traffic line.

South of Rashka lie two regions—the lakes region of Macedonia, where the high ground provides summer pastures, and the Vardar-Struma valleys, which differ from Rashka only in being more open to Ægean influences.

The western zone is the region of the Dinaric Alps and the Pindus Range. It is separated from the Adriatic transition region by the barren Zagora which supports a very scanty population.

The northern, Dinaric, section lacks transverse valleys and natural routes. *Planina* or mountain plateaus alternate with *polye* or basins in the Karst limestone; the first forest and pastoral areas, the second tiny plots of cultivated land. Here are present more definitely than elsewhere in Europe the peculiar limitations to human endeavour due to the solvent action of water, limitations which make this area a region of fundamental difficulty, a zone of trials. This region is the home of a scattered

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mountain people, ethnically the purest Slavs of Balkania. It has inevitably been the home of clans and isolated families, who have preyed at will or levied toll upon the fertile lowlands to the east. The southern, Pindus, section is the home of poverty-stricken mountaineers who are isolated in their fastnesses, and who isolate themselves by making the streams of their transverse valleys clan boundaries. Nature is harsh, but political circumstance is harsher; their crops and herds are maintained at a poverty level so that they do not excite the cupidity of their neighbours or of the tax-gatherer.

## 4. Hydrography

In consequence of the proximity of the Illyrian Alps to the western coast of the Balkan peninsula, most of the rivers which flow into the Adriatic and Ægean Seas are of inconsiderable length, and rapid in their flow. Of these western rivers, the only one of any moment which traverses the coast-lands of Dalmatia is the Narenta, the principal stream of Herzegovina. But out of a total length of 140 miles only about one-tenth is navigable. The next river, going southwards, that deserves mention, is the Boyana, navigable for about a dozen miles. drains the Lake of Scutari (Skodra), which has an area of about 145 square miles, and is itself fed by the Morača (Moracha), the principal river of Montenegro. Near the mouth of the Boyana is the outlet of the Drin, which flows for the greater part of its course along a narrow and tortuous bed, hemmed in by precipitous walls. Several other short streams or torrents plunge down these western mountains; but none serves any purpose of navigation. The Arachthos, Acheloos, and

Alpheios (Alpheus) may be mentioned because of their ancient associations; and, for the same reason, the Peneios (Peneus), which drains the plains of Thessaly, and seeks the Ægean Sea through the famous Vale of Tempe, between Mount Olympus and Ossa.

The Vardar (the ancient Axius), the chief river of Macedonia, belongs to the basin of the Ægean. Its total length is 200 miles; but it is practically useless for navigation, owing to its deep, narrow, winding bed, although, before the opening of the railway, boats used to brave its dangers, especially those of the two gorges known as Demir-Kapu (Iron Gate) and the Čingene (Chingene) Dervend (Gypsies' Ravine). Below this latter the river traverses the broad, but malaria-infested, plain of Kampania, and so enters the Gulf of Salonica, side by side with two other streams, the Vistritsa or Inje-Kara-Su (ancient Haliakmon), and the Galliko. These three streams, having slow currents, are rapidly building up a broad delta.

On the other (the eastern) side of the Chalcidice Peninsula the Ægean receives the Struma (ancient Strymon) and the Mesta or Kara-Su. Although the former stream has a total length of 225 miles from its source on the flanks of Mount Vitoša (Vitosha), it is in reality little better than a large mountain torrent as far as its entrance into the shallow coast lagoon of Takhyno-Göl. The Mesta, on the contrary, has pushed out a large delta, which is gradually approaching the island of Thasos, the channel between the island and the mainland being only 80 feet deep in the deepest part.

The only navigable river belonging to the Ægean basin is the *Maritsa*, which rises in the western end of the Rhodope Mountains, and, breaking out of their arms,

<sup>1</sup> Length 272 m.; area of basin 20,791 sq. m. (Strelbitsky).

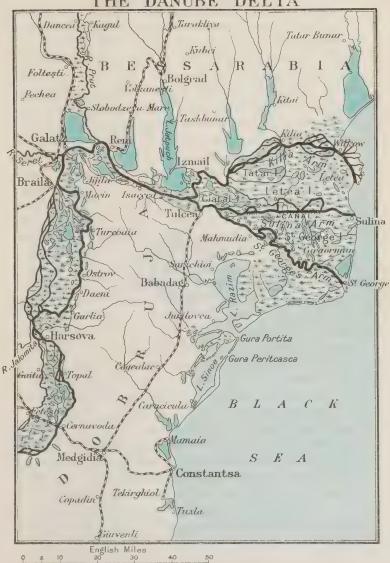
hurries eastwards, with a southern inclination, until it is able to get round their eastern extremity, and so find the sea a little to the west of the peninsula of Gallipoli. Its upper basin, of which Philippopolis is the queen, is hemmed in by lofty mountains, and is a fertile corn country. Its lower basin, in which it is joined at Adrianople by its considerable tributary the Tunja, assimilates more to the steppe regions, its principal product being pasture. Although some 270 miles long, the river is only navigable upwards as far as Adrianople, a distance of about 76 miles; and even to ascend as far as that is not unattended with difficulty on account of the rocks and sandbanks.

Many of the rivers of Greece, rising in limestone regions, disappear in fissures of the stony surface, and flow underground, emerging again as perennial springs of crystal clearness. Those which do run above ground are nearly all violent torrents, which roll down heavy masses of debris to the sea. On the east side of the Peloponnesus there is not one stream possessing a constant, or even periodic, flow. Those of the lakes too which are not coast lagoons have generally a subterranean outlet for their waters.

The only river entering the Black Sea which demands attention is the Danube, which, through its numerous tributaries, both from north and from south, carries off the rainfall of Rumania on the one hand and of Bulgaria and Serbia and Bosnia on the other. The more important of its right-bank tributaries are the Jantra, Osma, Vid, Isker, and Ogast—all Bulgarian streams; the Timok, Morava, and Drina, streams of Serbia, and the Bosna, Vrbas, Una—Bosnian affluents of the Save, which joins the Danube at Belgrade.

Below the series of gorges previously described, the

THE DANUBE DELTA



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Danube makes a wide sweep to the south, skirting on its left bank the broad alluvial plain of Wallachia, while on the right rises a more or less precipitous terrace (300 to 700 feet), ascending to the tableland of Bulgaria, which is deeply furrowed by its numerous affluents. This southerly sweep of the Danube is partly a result of the alluvial deposits brought down from the Carpathian and Transylvanian Mountains by its tributaries on the left bank, which are far larger and more numerous than those rising in the Balkans on the south of the stream.<sup>1</sup>

What may be called the present Danubian delta is of no great geological age, and is very moderate in its rate of growth. Between Tulcea (Tulcha), and Izmail the river divides into two branches, of which the northern or Kilia arm carries off the main volume of the water. The southern arm, known as St. George's, is, however, the more important, seeing that a branch which it throws off between itself and the Kilia arm is that which is principally used by sea-going vessels. This Sulina branch, as it is called, affords a depth of  $15\frac{1}{2}$  feet in all seasons, despite the tendency of the Sereth and the Pruth—powerful streams coming down out of Rumania—to form shoals and shallows with extraordinary rapidity.

Though swampy, the delta possesses woods of tall growth, e.g. that of Letea on the north, and Kara-Orman south-west of Sulina, whose dark masses produce a pleasing variety amidst the pale green elsewhere prevalent, and form a striking contrast to the waters of the Black Sea. The marshy shores of the river are resorted to by herds of buffaloes, enormous flocks of wildfowl, an occasional flight of herons, with here and there a few pelicans, while the stately stork abounds everywhere. Swarms

<sup>&</sup>lt;sup>1</sup> See also the chapter on Rumania.

of swallows, magnificent roller birds, tortoises, and other animals help to add animation to what would otherwise be a somewhat dreary landscape.

## 5. Geology-Mineral Products

The Balkans have a nucleus of crystalline gneisses, schists, and granites, backed on the north (Bulgaria) and on the west (eastern Serbia) by extensive formations of Cretaceous limestones and sandstones. But towards the Danube the Cretaceous rocks are covered by thick deposits of loess. The Anti-Balkan ranges, including the Istranja Dagh, have a similar structure to the Balkans. Rhodope Mountains consist of a predominatingly granite core, wrapped about with crystalline gneiss, and pierced by trachytic outflows of enormous extent. The upper and the lower basins of the Maritsa consist in large part of Quaternary deposits. Quaternary deposits also fill many of the deep depressions between the severely eroded limestones all over the peninsula. The mountain systems of western Serbia are built up principally of gneisses and crystalline slates, broken through by powerful eruptions of trachytes and serpentines, and much faulted in all parts. Between these and the Karst or Cretaceous limestone regions of Bosnia, Herzegovina, and Montenegro occur belts of Cretaceous and Triassic rocks. The Macedonian Mountains may be generalised as consisting principally of crystalline rocks—gneisses, mica-schists, and clay slates - overlain by extensive masses of eruptive granites, serpentines, and trachytes. The connecting link of Vitoša (Vitosha), as well as the Perim Dagh, which stretches north-west to south-east between the Struma and the Metsa, are examples of syenitic outflows on a scale of extraordinary volume. Again it is mostly Cretaceous formations that are exposed in the upper strata of the narrow, sharp-ridged, high-pitched coast-ranges which have been crumpled by great side pressure from the Adriatic.

The orographic contour of Greece has been shaped along exactly parallel lines to the rest of the Balkan Peninsula. Cretaceous limestones constitute the heart of most of the ranges and higher elevations. The greater portion of the rest of the surface is made up of Miocene sandstones, marls, and conglomerates, as are extensive areas in the basins of the Maritsa, Vardar, Struma, Morava, and other rivers. The islands on the west coast are precisely similar, but crystalline rocks predominate in the Cyclades. Patches of alluvium of greater or smaller extent occur at many places all round the coasts, more especially around the estuaries of the rivers and at the head of the bays. Nummulitic limestones crop out in the eastern Balkans, and in one or two other places.

The whole of the Peloponnesus has been subjected to a process of marked upheaval, not as one homogeneous mass, but in detached portions, circumscribed by one or other of the many faults which seam its surface. This movement took place in the later periods of the Tertiary epoch. But in most recent geological ages there has been a movement in the contrary direction, namely a movement of subsidence, which seems to have continued even within historic times. For at several points along the east coast of the Peloponnesus, between the isthmus of Corinth and Cape Matapan, ancient buildings, and amongst them buildings of a comparatively recent date, are distinctly visible below the sea. Some of these, e.g. at Hermione and Tænaron, rest upon solid rock, and cannot therefore be due to landslip or accidental submergence.

There is reason to believe that the Balkan Peninsula is rich in minerals. At the present time, however, mining is an industry of minor importance, even in those countries in which it is carried on to the greatest extent, namely Bosnia, Serbia, and Greece. More than two thousand years ago the gold deposits of the peninsula were worked on an extensive scale, and yielded enormous revenues to Philip of Macedon and Alexander the Great. The yield of Thracian gold in the days of Philip has been estimated at 1000 talents per annum. The better-known gold-mining localities were on the island of Thasos, the Chalcidice Peninsula, and in the basin of the Struma (Philippi). In Bosnia the goldmines of the basin of the Vrbas are stated to have sometimes yielded in the time of Nero as much as 50 lbs. weight of the precious metal in a single day. Silver was also extracted in great quantities in east Macedonia, in Chalcidice, and in the basin of the Vardar (Kustendil). The Kapaonik Mountains were likewise mined for silver by the Romans.

At a later date (1350-1450) gold and silver and lead were extracted in very considerable quantities in the mountain spurs lying to the east of the plain of Kossovo. This industry was in the hands of the merchant princes of Ragusa, and was carried on by Saxon (i.e. German) miners, who between them made Novo-Brdo (now nearly in ruins) one of the largest and most important towns in the interior of the peninsula. Contemporaneously with these mines others for silver and iron flourished in the Kapaonik Mountains, at Kratovo in Macedonia (between Kustendil and Üsküb), at Srebrenitsa, situated between the Povlen Planina in western Serbia and the Jagor Planina in eastern Bosnia, as also magnetic iron (this down to quite recent times),

at Samakov, at the north foot of Muss-Alla and Rila-Dagh.

Bosnia possesses unusual quantities of ores. Mining is restricted to the extraction of small quantities of coal, iron, manganese, copper, and salt. The metalliferous regions are the districts between the river Vrbas and the eastern frontier next Serbia. Coal is mined in various parts of the valley of the Bosna—at Zenica, 35 miles north-west of Serajevo; near Dolnja Tuzla, 50 miles north of Serajevo-as well as in the neighbourhood of Banjaluka, in the lower valley of the Vrbas. Some of the beds, that near Zenica, for instance, are 10 to 20 feet thick. Iron ores are worked at Vares, 20 miles north of Serajevo, the veins lying close to the surface. Salt is obtained at Dolnja Tuzla, at Konjica on the Narenta, 30 miles south-west of Serajevo, as well as at other places. In addition to these minerals the province possesses deposits of chromium, silver, antimony, and some gold. Bosnia, like most other regions of the Balkan Peninsula, is richly endowed with mineral springs, the best known being at Banjaluka, the Tuzlas, and Banja in the valley of the Lim.

The ancient and mediæval mining in the Kapaonik Mountains in Gld Serbia has been already mentioned. The extraction of the ores was, however, practically put a stop to by the oppressive rule of the Turks, and died out in the sixteenth century. It was not until about the middle of the nineteenth century that any real effort was made to resume mining in Serbia, and even then the industry languished for fully a quarter of a century longer. Roman workings can be traced in the northeast of the country, at Maidanpek (iron and copper) and at Kučajna and Kučevo (zinc, lead, silver, gold). The last named were specially famous in antiquity. Argenti-

ferous lead is obtained at Krupanj and other places in the Jagodina Planina, close to the Bosnian frontier. But the only mineral which is mined on anything like a large scale is coal. The mines suffered severely during the Great War. It is brought up principally at Dobra on the Danube, 15 miles north of Maidanpek; near Negotin in the valley of the Timok; near Cuprija in the middle valley of the Morava, and at other places. This coalfield between the Timok, Danube, and Morava is estimated to cover an area of 300 square miles, and to lie in a bed that is 120 feet thick. Extensive deposits of anthracite occur in the same district. Quicksilver is vielded in the neighbourhood of Belgrade; lithographic stones of fine quality near Valjevo in the north-west, and excellent white marble at Studenica in the valley of the Ibar. Serbia is rich in mineral springs, e.g. at Jošanica on the northern slope of the Kapaonik Mountains; Brestovačka, 25 miles south-west of Negotin; Aranjelovac, 35 miles south of Belgrade; Smerdan, in the valley of the Drina, about equidistant from Belgrade and Serajevo Mining is, however, a neglected industry in (Bosnia). Serbia.

The mining industries of Bulgaria are but little developed. Salt is evaporated on the Black Sea coast near Burgas and Varna; coal (lignite) is obtained in the upper valley of the Struma—the government works the mine at Pernik—and gypsum near Stara Zagora. Mineral springs abound on the southern slopes of the Balkans.

The silver mines of Attica, situated at Laurium, in the southern extremity of the peninsula, were amongst the most famous in antiquity. Their period of greatest activity was between 600 B.C. and the time of the Peloponnesian War. The magnitude of the mining carried on there is witnessed to by the gigantic heaps of slag and refuse which still cumber the spot, and which have been smelted in quite recent times with very profitable results. Along with the silver occur ores of lead, iron, and zinc. Iron is also present in the island of Seriphos, one of the Cyclades. Manganese, argentiferous barytes, and sulphur are all worked on the isle of Mēlos. The ancient iron ores of Laconia are too poor in mineral and too inconveniently situated to be worked with profit at the present time. The famous white marble quarries of the island of Paros, out of which the finest masterpieces of ancient Greek sculpture were chiselled, are still worked. The black marble quarries on the promontory of Tænaron (Cape Matapan), which enjoyed great vogue in the days of Rome's supremacy, have not yet been identified with certainty. Sea salt is obtained by evaporation in considerable quantities in several of the islands, e.g. Naxos, Levkas, Zante, Korfu. Amber is dug eastward of Thebes and in northern Eubœa.

## 6. Climate, Vegetation, and Animal Life

The highly mountainous character of this peninsula, its exposure to the Black Sea, and its long base-line next the continental mass of Europe, give the continental core a climate resembling that of central Germany more nearly than the climate of the Mediterranean region. All the more mountainous parts of the interior enjoy very abundant summer rains; whilst in the coast belts of the west and the south it is the winter months which are the wettest. Particulars gathered in Serbia, Bulgaria, and eastern Rumelia (the iron-works of Samakov) show that it frequently rains in summer for days, sometimes

for weeks, together. In Greece, on the other hand, the summers are unusually dry and rainless. There the rains come in the early autumn. In Bosnia the summer rainfall increases from the coast inwards. This is partly due to the relative lowness of the atmospheric pressure in the late spring and early summer over the northern regions of the peninsula, and partly to the fact that the moisture drawn up from the Black Sea in summer is condensed against the high mountains of the interior. In former times the area of sea on this side of the peninsula was much larger than it is now.

Snow-falls are likewise more frequent in the Balkan Peninsula than in any other part of the Mediterranean area. In Bosnia snow-falls and frosts sometimes occur as late as the middle of May at the height of 1500 feet above the sea. The inhabitants of northern Montenegro, in the porous and honevcombed region around Mount Dormitor, are indeed dependent upon the almost perpetual snows of that mountain for their summer supply of water. But whilst the higher inland parts have a semi-continental climate, with a considerable range between the summer and winter mean, the coast-strips next the Adriatic and the Ægean enjoy a climate which approaches more nearly to that of the typical Mediterranean lands, the winters much milder, the summers, owing to the sea influences, cooler and fresher than the confined inland basins, glens, and deeply sunk river valleys.

Malaria is a formidable scourge in all the lowland parts of Greece, as well as in the pit-like valleys of western Macedonia, as for instance the Kampania (west of Salonica), the basin of Monastir, the shores of the lakes west of Monastir. The febrile attacks of the malady come on at the end of the dry season, especially after the first rains, and reach their height in August

and September. This evil is much wider spread than in antiquity, and appears to be more deadly in its assault: probably a consequence of negligent cultivation, want of care in regulating the surface-water, and the retirement of the inhabitants from the lowlands into the relatively more inaccessible hilly districts to escape the rapacity of the Turks and the depredations of the Ægean corsairs. As to the climate of the north-west strip, and the occurrence of the bora in that quarter, see Introduction, pp. 42-43.

The characteristic vegetation of the Mediterranean is naturally found in those parts of the coast regions which, being open to the southern sun and sheltered against the cold winds from Russia, enjoy the characteristic Mediterranean climate. The maquis, or thick-leaved evergreen shrubs (see Introduction, p. 48), are plentiful on the coasts; and on the Dalmatian islands and the northern shores of the Ægean they often cover large areas to the exclusion of vegetation of every other form. The absence of the olive at Constantinople, in the latitude of central Spain and southern Italy, is an interesting illustration of the lower temperatures which prevail in southern Europe as a constant result of the absence of a sheltering barrier of mountains on the north. The green mountain pastures of the Rhodope and other lofty ranges form a striking peculiarity in a region which extends so far towards the south.

As regards the constituents of the flora, the close correspondence between the vegetation of the Roumelian Mountains and that of Mount Olympus on the Asiatic side of the Sea of Marmora is one of the clearest proofs of the recent date of the connection between the Black Sea and the Ægean. Among the endemic species there are two genera, Romondia and Huberlea, of peculiar

interest, inasmuch as they are the only representatives in Europe of an entire natural order (the Gesneracew), the nearest allies of which are met with in India,1 though the first of the two has another species in the Pyrenees.

Magnificent forests still cover wide areas on the mountain slopes. Enormous herds of swine are fed in the oak forests of Serbia and Bosnia, as they were in those of Greece in antiquity. Next after oaks the representative trees are the beech, maple, ash, elm, lime, the silver lime (in Macedonia), and the walnut and chestnut. Firs and other Conifera are found in the Serbian mountains; pines on the Albanian coastlands; and the Oriental plane along the Bosphorus.

The forests of Albania, and of the mountain links between the Balkans and the Rhodope, still harbour wolves and bears. The jackal is common in the Thracian and Macedonian uplands. The chamois ranges over the highest portions of the peninsula. Deer and wild boar are also frequent in the wooded districts. The inland streams are full of fish; the coast lagoons of the Adriatic yield eels in great quantities; and there is a herring and mackerel fishery in the Bosphorus. The eagle, stork, pheasant, and waterfowl are the more characteristic species of the avifauna.

Engler, Versuch einer Entwickelungsgeschichte, etc., i. 63.

#### CHAPTER XVIII

#### YUGO-SLAVIA

## 1. Yugo-Slavia

The kingdom of the Serbs, Croats, and Slovenes, briefly known as Yugo-Slavia, comprises the former kingdoms of Serbia and Montenegro, the former Austrian crownlands of Bosnia and Herzegovina, parts of southern Austria, Slovenia, and Dalmatia, and parts of southern Hungary, Croatia, Slavonia, etc. Greater Serbia has thus expanded to the north-west well beyond the limits of the Balkan Peninsula at the expense of Austria and Hungary.

# 2. People of Serbia-Occupations

It will be convenient to describe the kingdom piecemeal in the order of its expansion, beginning with the area which constituted Serbia at the beginning of the century.

Serbia,<sup>2</sup> in 1900, nearly two-thirds as large as Scotland, is almost everywhere hilly or mountainous. It comprises the natural region, the Morava valley or Shumadya, with extensions south to Vranya and west to the Drina. The valleys and lower hill-tracts, however,

<sup>&</sup>lt;sup>1</sup> Area, 101,000 sq. miles; pop. 15,000,000.

 $<sup>^2</sup>$  Area, 18,644 sq. miles; pop. (1921), 3,000,000, giving a density of 160 per sq. mile.

are fertile, and the slopes of the mountains in most parts of the country well wooded. Ninety per cent of the population are Serbs, a branch of the southern or eastern division of the Slav family. They settled in their present quarters towards the middle of the seventh century; and from the middle of the twelfth played a predominant part in the politics of the Balkan Peninsula, until their empire was shattered by the victorious Osmanlis (Turks) in 1389. After that disaster the Serbs were ground down by the despotism of the Turks for a period of more than four hundred years. But, although subject to Turkish rule, the nation was never wholly and entirely subjugated. The people always cherished the memory of their former greatness and independence, and kept alive the spirit of freedom in heroic ballads possessed of considerable poetic value. Moreover, the more restless spirits kept up a persistent and implacable guerrilla warfare against the Turk in every generation, finding a secure and inexpugnable retreat in the mountains and glens of the Kapaonik Range and in the difficult country around Kragujevac (Kraguyevats), a broken, mountainous region overgrown with dense oak forests.

The Serbs have a peculiar social organisation which exhibits certain of the more characteristic features of communism. This is the *zadruga*, a voluntary association of blood relatives, owning property, and sharing all labour, in common, under the direction and authority of a patriarchal elder or family head. They are almost entirely adherents of the Greek Orthodox Church.

In addition to the Serbs, the political confines of the country embrace a number of Rumanians (about 7 per cent of the total population), principally settled in the north-east districts next the Danube and Rumania. The

rest of the population is made up of Gipsies and divers foreigners.

Pastoral pursuits, such as the tending of enormous herds of swine in the vast forests (oak and beech principally) of the west and south-west, as well as grazing cattle, and in smaller measure sheep and goats, are the favourite occupations of the people. The crops principally grown are maize (the staple food of the people), wheat (for export), with some rye, barley, hemp, and flax, and tobacco. Vineyards are objects of attention in the north-east and east, and wine (red) is made and sent to France. Plums are grown on a very extensive scale. They are dried and exported in vast quantities under the name of prunes, whilst other large quantities are used in the manufacture of the native brandy (slivovitsa).

The manufacturing industries of the country hardly go beyond the scope of supplying the domestic needs of the people. And yet, but for the lack of enterprise and want of capital, Serbia might develop a respectable degree of manufacturing industry. She has coal. She has a large navigable waterway, the Danube, in close proximity to her coal beds. The manufacture of clothing, the weaving of carpets, the making of silver filigree ornaments, and of ropes, are the only branches that call for special mention. Mining, which might be carried to an extremely prosperous stage, languishes, chiefly for want of native enterprise, and because of the little encouragement which is offered to the employment of foreign capital.

The same causes which stand in the way of the growth of industry also prevent Serbia from utilising to anything like their full value the natural advantages which she enjoys in a commercial regard. From the

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position she occupies, as commanding the chief line of communication between Balkania and the centre of Europe, and from her favourable position with regard to the Danube, Serbia possesses conditions which a people of commercial instincts would assuredly not fail to make excellent use of. As it was, the pre-war trade of the country was almost entirely dependent upon Austria-Hungary, which controlled something like 75 per cent of its total volume. The possession of the trunk-line of railway along the Morava valley, with the junction of the lines to Constantinople and Salonica, is not of so much service to the Serbs as it ought to be, because of the deficiency of branch lines to feed it, and of roads in sufficiently good repair in the more inaccessible districts. Branch lines do something to remedy these drawbacks. From Radujevac, on the Danube, one line goes up the valley of the Timok to Nis (Nish), and thence by way of Prokuplje through the Kapaonik Mountains to join the Mitrovica (Mitrovitsa)-Üsküb line in Kossovo; a second ascends the valley of the Western Morava and goes thence west to Užice (Uzhitse) and Serajevo; while shorter branch lines serve the north-west corner. The railways are single track, and the handling of goods and coal leaves much to be desired.

## 3. Towns

The great bulk of the population of Serbia live in large open villages, and towns are few and far between. The capital is *Belgrade* <sup>1</sup> (Beograd, "white city"). Its history has been for the most part the chequered career of a frontier fortress constantly exposed to the first direct attacks of persistent and easily excited foemen.

<sup>&</sup>lt;sup>1</sup> (Belgrade), pop. 91,000.

Its value as a fortress lay in its citadel crowning a defensible hill at the angle between the confluence of the Danube and the Save, and not very distant from the junction of the Theiss, with the Danube on the one side, and of the Morava, with the Danube on the other. The ancient Singidunum, it was a possession of the Byzantine emperors till towards the close of the eleventh century. After being contested by Greeks, Bulgarians, and Serbs, it became in the middle of the fifteenth century the apple



BELGRAUE.

of contention between the Turks and the Hungarians. During the following three hundred and fifty years it was taken and retaken by the Turks on the one hand, and by the Hungarians and Austrians on the other, time after time. Of the many memorable sieges and captures it has endured, the most famous are the storming of the place by Hunyady and John Capistrano in 1456, and the capture of the citadel by Prince Eugene in 1717. It was made the capital of the Serbian kingdom in 1862; but was not finally evacuated by the Turks

until 1867. But it is not merely a place of strategic importance; it is also the centre of a great trade between central Europe and Balkania, enjoying excellent river navigation as well as railway connections. During the Great War the city was bombarded severely by the Austrians in 1914, and again in 1915.

The second town of Serbia is Niš (Nish), the ancient Naïssus, the birthplace of the emperor Constantine the Great. It stands at the confluence of the Nishava with the Morava, and at the junction of the roads from Constantinople, Salonica, Durazzo, and the middle Danube by the Timok valley and by the valley of the Morava. Here too the two great trunk railways from the south of the peninsula meet together, to be continued north over one line to Belgrade. Of the remaining towns only one or two call for mention. The fortress of Semendria (Smederevo) and the town of Požarevac<sup>2</sup> (Pozharevats, formerly often known as Passarowitz), both situated near the mouth of the Morava, may be regarded as the twin successors of the ancient Roman military station of Viminacium, the extensive ruins of which still remain near the mouth of the Mlava. Down to the later years of the Middle Ages the great road to Byzantium ran from Belgrade to Semendria, and there turned up the Morava valley. The national capital of the Serbs during the period of their subjection to the Turks was not Belgrade, but Kragujevac 3 (Kraguyevats), situated near the middle of the country in the hilly region of Shumadya. Kruševac (Krushevats), near the junction of the two Moravas, was the residential seat of the last of the mediæval tsars of Serbia—Lazar—who fell (1389) in fight against the Turks on the fatal Field of Blackbirds.

#### 4. New Serbia

In 1913, as a consequence of the Balkan wars, Serbia expanded southwards; the accretion of territory is known as New Serbia in distinction with the area just described, to which the name Old Serbia is sometimes applied.

New Serbia <sup>1</sup> comprises the natural regions of Rashka and the Vardar valley, and with Old Serbia extends throughout the middle section of the continental core of Balkania. In the south it marches with Bulgaria, Greece, and Albania. Thus the Serbians gained control of ancient Serbia, Rashka, the original home of their race.

The main line of communication is the Vardar valley to Salonica; here is the railway by Üsküb from Nish to the Ægean, and branches westwards reach the edges of the Dinaric region.

In the Vardar valley the people are Macedonian Slavs, some of whom are Greek Orthodox, while others have been Moslemised. Here the patriarchal system of the Slavs has been overlain with a veneer of Byzantine culture.

The picturesque town of Üsküb, the ancient Skupi, birthplace of the emperor Justinian, is the most important place in the upper valley of the Vardar. It stands at the point where the Belgrade-Salonica road is met by the road which comes out of Bosnia via Kossovo, and is an active centre for the politico-religious agitation which rival Serbs and Bulgarians carry on with so much zeal amongst the Macedonian Slavs. Üsküb is the chief railway centre of the district. But in point of size Üsküb is surpassed by Prizren, an old Serbian capital, which lies in the fertile basin of Metoja on the

<sup>&</sup>lt;sup>1</sup> Area, 15,075 square miles; pop. 1,500,000.

other side of the Shar Dagh. Prizren too is the meetingplace of some of the chief routes connecting the Adriatic with Rashka.

## 5. Montenegro

The little principality of Czrnagora (Chrnagora) or Montenegro, which the Turks call Kara Dagh, all three names alike meaning Black Mountain, a name pointing, it is almost certain, to the dark forests which formerly covered the country, has an extent of no more than 3500 square miles, and, till the treaty of Berlin in 1878, was entirely an inland state. By that treaty, however, it acquired a small strip of coast, but no really serviceable harbour. The same treaty nearly doubled its area, giving it in the east the Brda, a highland region adjacent to the head-streams of the Tara and the Lim—a region well wooded, rich in pasture, and with warm, fertile valleys. In the south too a valuable addition of territory was made in the upper valleys of the Morača (Moracha), valleys which lie open to the sun, and consequently enjoy a warmer and more genial climate. The original or older part of Montenegro is for the most part a stony, waterless region, with a rigorous climate.

The people of Montenegro are in great measure dependent upon imported food-supplies. Their principal natural source of well-being, as well as their chief occupation, is afforded by their flocks of sheep and goats. In the well-watered valleys of the south, fruits (grapes, olives, figs, pomegranates, almonds) and corn are grown, and as a rule two harvests are reaped in the year off the same piece of ground. Wine is made in small quantities. The streams of this same region, together with Lake Scutari, two-thirds of which belongs politically to Montenegro, are rich in fish, the most characteristic species



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being the bleak (scoranze). Trade is insignificant. A narrow-gauge railway joins Antivari to Vir Pazar, and in the south a system of carriage roads joins the villages with the coast. Burdens are carried on packhorses, or on the backs of the women. The men have hitherto been pre-eminently a race of warriors, spending their lives in fierce guerrilla warfare against their hereditary foes the Turks. For the Montenegrins are of Serbian race, the descendants of the indomitable remnant who refused to bow the neck to the yoke of the Mohammedan invaders, and who found a retreat of great natural strength in the rugged Karst region, from which they have derived their name. Their patriarchal culture, amusements, and dances resemble those of the Serbs. The country possesses no towns in the proper sense of the word.

Cetinje<sup>1</sup> (Tsetinye), the capital, is merely a village. The religion of the people, who are adherents of the Greek Church, renders them in a considerable degree susceptible to the influences of Russia. Education, which has made appreciable strides of late years, is subject to the same influences. The head of the state was for nearly three hundred and fifty years (previous to 1851) at the same time the supreme ecclesiastical officer (vladika) in the country. Since 1851 the ruler has been prince and then a king. By a tragedy of the Great War Montenegro is the one small state which has lost its independence.

# 6. Bosnia and Herzegovina

Down to the Middle Ages the region now embraced in the provinces of Bosnia and Herzegovina <sup>2</sup> was the seat

<sup>1 (</sup>Cetinje), pop. (approx.), 5500.

<sup>&</sup>lt;sup>2</sup> Area, 19,760 square miles, of which 3530 square miles belong to

of a thriving civilisation, first planted by the Romans, and subsequently fostered by the civilising influences of Venice and the Dalmatian towns. But the Turkish hosts came, and in a short space of time ruthlessly blotted out the culture and refinement of centuries. For many long years these provinces were as if lost to civilisation. Their sons were taken away wholesale when young, trained up in the Mohammedan faith, and enrolled as soldiers of Islam in the martial ranks of the Janissaries. But the day of emancipation dawned upon this portion of the Balkan Peninsula in the middle of the nineteenth century; and in virtue of the Treaty of Berlin (1878), Bosnia and Herzegovina, together with the former Turkish sanjak (district) of Novi Pazar, passed formally under the administrative control of Austria-Hungary. The inhabitants are Serbs by race. Since the Turkish rule was superseded by the more enlightened administration of Austria, the country made great strides along the path of progress. Between 1871 and 1891 the area of the soil brought under actual cultivation increased from 40 to 75 per cent out of the entire area that admits of being cultivated with profit. In subsequent years progress was less rapid, and despite the fertility of the soil the yield from agriculture, to which nearly 90 per cent of the population was addicted, was relatively small.

Herzegovina belongs almost entirely to the barren and desolate region of the Karst. Bosnia, on the other hand, whilst ridged in every direction by the spurs and offshoots of the Dinaric Alps, bears some resemblance to the Tirol, in that it possesses magnificent woods of oak, fir, lime, beech, pine, and other Conifere, with fertile valleys

Herzegovina; pop. (December 1885), 1,336,000; (April 1895), 1,565,000; (1920), 1,900,000, showing a density of 97 to the square mile.

between the mountain-ranges. The surface of Bosnia is distributed between forests and arable land in the proportions of 50 per cent and 25 per cent respectively of the total area. The state encourages the planting of trees in a systematic and intelligent fashion. The people are principally employed in raising the raw products of the country. Apart from mining (which is treated of elsewhere), the breeding and feeding of cattle, horses, swine, sheep, and goats is of more importance than the cultivation of cereals and other crops. Nevertheless, maize is grown in considerable quantities and up to an altitude of 2000 feet. Mediterranean fruits thrive from that level up to 4600 feet. Cattle, sheep, skins, and plums are exported in large quantities. Austrian authorities took extraordinary pains to develop the natural resources of the country, as well as to instruct the people in the more modern and scientific principles of rural economy. They introduced the mulberry tree, the beetroot (for sugar), tobacco, and various fruits and vegetables. They constructed railways, made roads, and improved river navigation. They made topographical surveys of the country and studied in very thorough fashion its geological structure and history. They explored its antiquities and founded museums. By means of mortgage banks, issuing loans on easy terms, and in similar ways they helped to emancipate the peasantry from their serf-like dependence upon the large landed proprietors. They fostered efforts to improve the breeds of horses, cattle, and sheep, set up cheese factories and model dairies, and founded commercial and technical schools. The consequence of all this remarkable reforming energy is that the trade of the country was doubled during the Austrian occupation. On the whole, Aus-

<sup>1</sup> Page 665.

trian efforts tended to remove the paralysing influence of Turkish rule and restored to the Serbo-Croat peasantry an interest in the land, and so revived the Slav spirit.

Bosnia is by nature allied in character to Old Serbia, Herzegovina belongs to the Dinaric region. The Bosnian rivers, Vrbas and Bosna, and the boundary streams, Una and Drina, like the Morava facilitate communication. The railway system is of peculiar interest. North of the Save a railway connects Belgrade with Zagreb. From this line two routes go south, the one across Bosnia and the other across Bosnia and Herzegovina to Sebenico and Ragusa, both Dalmatian ports on the Adriatic. Two east-west lines connect, except for a short break near Banjaluka, the Sebenico route with the Morava route in Old Serbia. The tortuous curves followed by these lines indicate their use of the valleys and show how they supplement river transport.

The people number about 2,000,000, of whom 30 per cent are Moslems and 40 per cent are Greek Orthodox Serbs, who live chiefly in the eastern half of Bosnia. Of the remainder the majority are Roman Catholic Croats who inhabit the areas adjacent to Croatia and Dalmatia where the people are of the same type.

Education is being fostered in all grades, and intelligent consideration is being given to sanitary and other matters of public welfare.

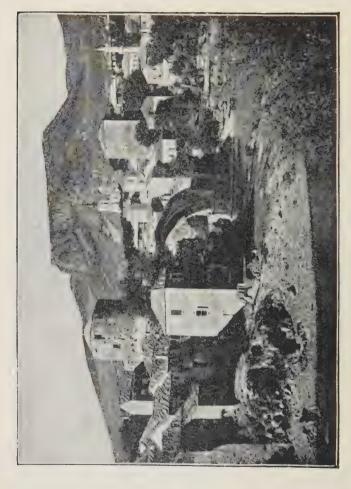
The capital of Bosnia, Serajevo or Sarajevo (Turkish Bosna-Serai), was built out of the ruins of two towns built here by the Hungarians, Bosnavar and Kotor, in the year 1465. Under Turkish rule it grew to be a large town, the centre of the administration, as well as of an active trade. At the present day it manufactures cutlery,

swords, tobacco, wooilens, leather, and other commodities. It has been repeatedly destroyed by fire, the last time in 1879. Since then it has been rebuilt on an intelligent plan, and is now one of the finest cities in the Balkan



Peninsula. The citadel, which especially commended it to

the favour of the Turks, stands on a projecting crag overlooking the town. In the Serajevo Museum the specimens of the flora of Bosnia and Herzegovina number at least 3000. The town hall is a handsome building in the eastern style, with an imposing frontage to the Miljačka. This stream, a tributary of the Bosna, itself affluent to the Save, cuts across the mountains by a steep-sided valley which is used by the narrow-gauge railway



between Serajevo and Visegrad. Jajce, the ancient capital, occupies a strategic situation at the junction of the Pliva with the Vrbas. Both of these streams flow in ravine depressions with steep banks; the Pliva descends 90 feet over a beautiful cascade as it joins the Vrbas near the Jajce gorge of that stream. Mostar, the chief town of Herzegovina, is a small town with manufactures of weapons and tobacco. It nestles at the foot of the Podvelez, an imposing flat-topped hill with precipitous cliffs, and guards a massive single-span stone bridge across the Narenta. The fifteenth-century bridge gives its name to the town, for Mostar means Old Bridge; its span is 60 feet high, and the town spreads lengthwise along the narrow valley from the bridge-head.

#### 7. Dalmatia

Dalmatia comprises the islands and Adriatic coast strip between Zara and Cattaro, part of the western transition region, and the central portion of the Dinaric region. It forms a mountainous connecting link between the Carso and Herzegovina, both of which are areas of Karst formation visited by the bora; the mountains are fringed by a narrow coastal sill, where the people live. Except for the railway lines north from Sebenico and Ragusa previously mentioned, and roads from Drnis, Sinj, Metkovic, and Ragusa, there is little means of communication beyond the mountains, and the Slav population has been subject to Latin influences. In fact, compact bodies of the people still feel strong Italian sympathies. The men contributed largely to the personnel of the Austrian navy and mercantile marine. Sardines and tunny, coral and sponges are the chief products of the fishery. In favoured areas, where the limestone terraces face south, vines and other Mediterranean plants flourish, so that the production of wine and maraschino liqueur from the wild cherry gives rise to



CATTARO.

valuable exports. Throughout the area, as in Herzegovina, the water supply is a source of anxiety despite the quantities of winter rain.

Picturesque little seaports and fishing-towns of Zara, Sebenico, Spalato, Ragusa, all with memories of a

# GULF OF CATTARO





chequered past, lie behind the Dalmatian islands, and Cutturo lies at the head of an admirable landlocked natural harbour (with an entrance in one place less than a quarter of a mile in width). It is an excellent naval station, but deprived of all importance commercially by the lack of facilities for communication with the interior. Of the other towns the most celebrated historically is perhaps Spalato, lying on a small inlet opposite (northeast of) the ancient Salona round the palace built by Diocletian, who here spent in contented retirement the last nine years of his life, rejecting the solicitations of his former colleague in empire to resume the reins of government, with the observation that "if he could show Maximian the cabbages which he had planted with his own hands at Salona, he should no longer be urged to relinquish the enjoyment of happiness for the pursuit of power." 1

#### 8. Croatia

Before the Great War Croatia-Slavonia was a semi-autonomous appendage to Hungary in which the Magyarising influences of the ruling caste had been least effective within the kingdom. It comprised the mesopotamian region between the Drave and the Save, with an extension westwards to the Adriatic Sea which gave Hungary access to its port of Fiume. Counting the Save as the boundary of Balkania, Croatia should be considered separately from Slavonia.

Croatia comprises a fragment of the Adriatic transition area, a large section of the Dinaric Karst area, and, in addition, a portion of central Europe north and northeast of Zagreb. The Balkan portion is of little importance, being scantily peopled and unproductive. It has a

<sup>1</sup> Decline and Fall, ch. xiii.

relatively denser population along the railway line which connects Zagreb with Fiume.

The mesopotamian region, which comprises an Alpine hilly interior with alluvial flats along the rivers, is productive of maize and plums, has forests of oaks and beech, and many horses and pigs.

Zagreb (Agram), the capital of the former Hungarian province, is an earthquake centre. It is situated on the slope of a hill north of the Save and is the centre of Croat culture. The Roman Catholic Croats predominate; they live in compact groups except along the boundary of Bosnia; some of them indeed penetrated north of the Drave into the zone of mixed population along the frontier between Austria and Hungary. Consequently, Zagreb disputes with Belgrade the title of predominant centre of Yugo-Slav aspirations, and separatist tendencies find voice in the city.

#### 9. Slovenia

Slovenia is the home of the Slovene branch of the south Slavs. Before the Great War the land was Austrian, comprising the province Carniola and part of Styria. Here is the boundary line between central Europe and Balkania. In the south Slovenia is Karst and in the north-east Alpine hill-country between the Save and Drave with an extension between the Drave and Mur.

In these respects Slovenia resembles Croatia, and the likeness is intensified by two additional facts: the bulk of the people and their homeland are more central European than Balkan, and the country is crossed by a great railway connecting Trieste, now an Italian port, with Vienna. Further, while the Serbs are peasant

proprietors with a patriarchal (zadruga) culture in Old Serbia, the Croats are peasants with central European methods, the Slovenes are peasants who have evolved an additional stimulus, many of them are business organisers and traders; the Slovene, thus, is outside Balkan limitations. He is Roman Catholic like the Croat and less illiterate than the Serb.

Ljubljana (Laibach), the capital, the Roman Emona, stands on the river Laibach which has a Karst habit of disappearing and is an earthquake centre like Zagreb. It is equally a great railway centre on main lines to Vienna, Berlin, Budapest, and Belgrade, Trieste, Fiume, and Zagreb. Maribor (Marburg) commands a railway crossing over the Drave. Idria, just over the frontier, is one of the two mining centres for mercury in Europe.

## 10. Slavonia, etc.

The remainder of Yugo-Slavia lies north of the Save-Danube line and is, in no sense, part of Balkania. Before the Great War it formed part of Hungary, and comprises Slavonia and parts of Baranja, Bačka, and the Banát.

Slavonia is the eastern portion of the Save-Drave mesopotamia; its eastern section is Syrmia, which forms the angle between the Save and Danube and reaches to Zemun, which is joined to Belgrade by the Save bridge. The riverine lands are low and marshy, especially along the Save; the middle is hilly, the final dying flickers of the Alpine upheaval. Cattle and horses are reared, and vines on the slopes. Railway lines run north-west from Zemun to Vinkovci, and thence near both Save and Drave into Croatia. Osek and Petrovaradin are notable railway junctions for traffic to Budapest.

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North of the Drave-Danube line lies a lowland area of considerable fertility which may be regarded as the southern continuation of the great Hungarian lowland. This area includes the Baranja west of the Danube and south-west of the hills near Pécs, the Bačka between the Danube and the Tisza, and the Banát between the Tisza and the Carpathians with the Máros on the north. The whole area is central European, with agriculture as the main occupation as in Serbia, but agriculture as a commercial proposition with an outlook beyond local needs. As part of the price of victory the Serbs claimed the whole of this area, including the mining areas of Pécs and of the eastern Banát. Their claim was backed by the assertion that the bulk of the inhabitants were Slavs, or were, at any rate, not Magyars. This claim was complicated by the fact that scattered throughout the area were many settlements of Germans. In the end a tiny triangle near the Drave-Danube confluence, the Bačka south of Subotica (Szabadka), and the western fragment of the Banát were included in Yugo-Slavia; giving that state alien elements of Germans, Magyars, and a few Rumanians. Strategically, the effect of this decision is to remove Belgrade from its dangerous frontier position. Commercially, Yugo-Slavia gains by securing a dominant position on the waterways of the Danube basin. The confluences—Drave-Danube, Save-Danube, and Tisza-Danube—and the main connecting link for water traffic between the Tisza and the Danube -all lie within Yugo-Slavia. In addition to the acquisition of much fertile lowland, Yugo-Slavia gains the important towns and railway junctions of Subotica, Sombor, Kikinda, and Novi-Sad (Uj-videk), with large sections of the canal system of this lowland.

## 11. Yugo-Slavia as a whole

The foregoing description of the growth of Greater Serbia leads to one conclusion, the state is more concerned with central Europe than with the Near East. Shut off politically from the ports Trieste, Fiume, and Salonica, of the Mediterranean region, with merely a scantily peopled coastal sill of fisherfolk in the transition region on the Adriatic, and bounded in reality by the barren, almost depopulated Dinaric and central Balkan mountain areas, with all her main rivers leading to the Danube, and long frontiers with Austria, Hungary, and Rumania, across which her railways lead and her trade must pass, Yugo-Slavia is central European and her future lies with Czecho-Slovakia and Rumania.

Instead of being one section of one corridor from central Europe to the Mediterranean she lies athwart all the eastern routes from Berlin and Vienna to the Near East. After many vicissitudes, her people, largely one in race, freed at last from Turkish oppression, Magyar despotism, and Teutonic tutelage, are one.

## CHAPTER XIX

#### THE KINGDOM OF BULGARIA

# 1. General Appearance—Products—Industries

Bulgaria 1 (the ancient Mosia) one of the last countries to throw off the paralysing influence of the Turk, embraces the broad plateau which slopes northward from the Balkans towards the Danube, and on the south of that range the upper valleys of the Maritsa and the Tunja. On the whole, except in the north-east towards the Dobruja, it is a well-watered region, and has several districts of excellent fertility, such as the loess belt alongside the Danube, the valley of the Maritsa, and the chain of valleys watered by the Tunja between the Balkans and the Anti-Balkans. The general character of the plateau of North Bulgaria is a level undulating tract, bare and treeless, with the streams hidden from sight at the bottom of deeply eroded trenches, and apparently almost uninhabited; for the villages are few and far between, and many even of these almost concealed from sight, owing to their being built on the floors of the steep-walled valleys. A steppe region similar to South Russia, it is an outlier of eastern Europe. The slopes of the Balkans and the more fertile parts of southern Bulgaria (or Eastern Rumelia, as it is also called), thanks

<sup>&</sup>lt;sup>1</sup> Area, 45,000 square miles; pop. 5,200,000.

to the innumerable mountain rivulets and brooks, are clothed with refreshing green—green meadows, groves of walnut and chestnut trees, orchards, waving crops, multitudes of single forest trees scattered all over the face of the country. The spurs of the Anti-Balkans, and the higher valleys of the Rhodope Mountains, whilst still showing the predominant colour of green, show it in a more sombre tint. They are covered with dense primeval forests of oak, beech, and other trees. Similar forest regions exist in the central parts of northern Bulgaria, between Pleven (Plevna) and Trnovo; also in the east of the same part of the principality, namely, the forests of Deli-Orman between Varna and Ruščuk (Rushchuk)

The Bulgarian, in contradistinction to his neighbour the Serb, is a good and thrifty husbandman; and now that the dread of Turkish rapacity is banished from the land, his natural intelligence is quickly teaching him the value of improved methods of cultivation and the use of modern implements of agriculture. His principal grain crop is wheat. Of this cereal, together with barley, rye, oats, maize, anise, and sesamum, the last two grown only south of the Balkans, Bulgaria exports to the extent of 90 per cent in value of her total annual exports. Wine is made all over the kingdom, and is being prepared in increasing quantities south of the Balkans. In that region too silkworms are bred, and cotton, tobacco, and rice (near Philippopolis) are grown. The favoured valleys between the Balkans and the Anti-Balkans, as well as the valleys on the northern face of the Rhodope Mountains over against Philippopolis, are planted with acres upon acres of rose-trees. The preparation of the aromatic oil, otto or attar of roses, from the leaves of the flowers, is a flourishing industry. Plums grow wild in many places on the plateau of northern Bulgaria. The fruit, cooked, is largely eaten for food.

Bulgaria, like Serbia, has her active and well-nigh universal domestic industries, such as the weaving of coarse woollen cloth, carpets, and hosiery, and the grinding of wheat into flour. The people display a peculiar aptitude for many branches of industrial activity. An excellent start has been made with the development of manufacturing industry on a larger and more modern scale in several towns immediately north and south of the Balkans. Foreign trade is carried on principally with Austria, Hungary, Germany, Great Britain, and France.

Bulgaria is tolerably well equipped with good roads, a great deal having been done for the northern half of the kingdom by the enlightened Turkish statesman, Midhat Pasha (1865). The roads there keep for the most part to the table-land, which is easier than the narrow, rugged valleys, and far healthier than the low confined grounds next the streams, where malaria is prevalent at nearly all seasons. The Balkans, as has been already stated, are crossed by several fairly good driving roads. Eastern Rumelia and the basin of Sofia are traversed by the great trunk railway from Vienna and Belgrade to Constantinople. Other railway lines connect Burgas on the Black Sea with the upper valley of the Maritsa, and with the northern slopes of the Balkans; and Varna, another Black Sea port, with Ruščuk, a port on the Danube.

Since 1878 Bulgaria has had frequent changes of territory. In 1885 Eastern Rumelia was acquired, and, except for slight modifications in 1886, the state remained a compact oblong until the Balkan Wars. In 1913 the southern boundary was pushed south to include the Strumitsa valley, the Rhodope Mountains, access to

the Ægean with a stretch of coast-line from Dede Agach and the basin of Golyema river south of Burgas. The southern Dobruja was, however, ceded to Rumania. In 1915 the Adrianople district and the left bank of the Maritsa were acquired. After the Great War the western frontier was modified at four points in favour of Yugo-Slavia, while the Adrianople and Ægean Sea districts were yielded to Greece. The net result of these changes is that the population has become more homogeneous: in the north-east and south there are Turks, and along the coast of the Black Sea, Greeks; elsewhere Bulgars predominate.

# 2. People

Since their emancipation from Turkish misrule in 1878, excellent progress has been made by the Bulgarians in nearly all departments of national life, the shortness of the time being taken into account; but in no department has such a rapid improvement been effected as in education. Schools have been built, and all pains are taken by the government to make the people acquainted with the blessings of knowledge, both practical and theoretical. A vivid light is thrown upon the previous condition of the country, when it is stated that in southern Bulgaria there are stretches of several miles beside the main highways, without a single village. In order to escape the extortion, tyranny, and cruelty of their Turkish masters, the people were compelled to take refuge in the denser forests and amid the recesses of the hills. About 75 per cent of the total population are native Bulgarians; the rest consisting of Turks (under 20 per cent), Rumanians, Greeks, Gipsies, and Jews (originally from Spain). The Greek Orthodox Church claims threefourths of the population. Rather more than 20 per

cent are Mohammedans, including a certain number of native Bulgarians (Pomaks). The Bulgarians take their name from the ancient Bolgari, a Finno-Ugric stem, whom we first know of as settled along the lower course of the Volga. In the seventh century they penetrated into the Balkan Peninsula, and having conquered the native Slovenian settlers, adopted Christianity as well as the language and civilisation of their subjects, and so became virtually Slavs. During the ninth and tenth centuries, and again in the twelfth, they extended their power over the greater part of the Balkan Peninsula. Then for close upon five hundred years they groaned under the iron hand of the Ottoman Turks. Southern Bulgaria was not freed until 1885, seven years after her more fortunate sister north of the Balkans.

#### 3. Towns

The towns of Bulgaria are for the most part aggregated along the Danube, on the slopes of the Balkans and Anti-Balkans, and in the valley of the Maritsa. As a rule they are not very populous. Philippopolis, the second largest town of the kingdom, cannot muster 40,000 inhabitants. This place, called by the Slavs Plovdin or Ploydiv from the fifteenth to the seventeenth century, was founded by Philip of Macedon, in the middle of the fourth century B.C. It is built upon three isolated syenite hills and the intervening hollows, in a central position in the upper Maritsa valley, and on the great route from Constantinople to Belgrade and Vienna. It is also the terminus of an easy road into the fertile valley which lies between the Balkans and the Anti-Balkans, and is itself surrounded by another fruitful region. Stara Zagora, <sup>1</sup> (Philippopolis), pop. 48,000.

on the south side of the Anti-Balkans, and Sliven, at their eastern end, are both converging points for roads over the Balkans. Sliven (Slivno) was of some importance in the Byzantine era, under the name of Stlifanos. Burgas and Varna are the two seaports which Bulgaria possesses on the Black Sea. The former serves Bulgaria proper; the latter South Bulgaria (Eastern Rumelia). On the north side of the Balkans the towns are numerous, but small, except on the bare plateau, which is altogether very thinly inhabited. The only town of any size towards the east is *Shumla*,<sup>2</sup> Bulgarian Sumen (Shumen), a place of great strategic value, in that it commands the eastern passes of the Balkans, and the road to the lower Danube and Russia, whilst it is also within easy reach of Varna by rail. It is defended by a ring of detached forts. Vidin is a fortified post, near the point where the Danube first touches Bulgarian territory. The principal place on the Bulgarian plateau is the singularly built town of *Trnovo*. The point of convergence for the roads over the central parts of the Balkans and the Danubian crossings at Svištov (Svishtov) and Ruščuk<sup>3</sup> (Rushchuk), and the centre of the basin of the Jantra, it is marked out by nature to be a focus of influence. Indeed, for two hundred years (1186-1393) it was the capital of the ancient Bulgarian kingdom. The town is built on the steep sides of a hill, the houses tier above tier, and on the almost precipitous walls of the ravine through which the Jantra flows. But at this spot the river coils and doubles back upon itself in the most extraordinary way. At one point the opposite sides of the gorge are linked together by a remarkable bridge of natural rock, but so narrow that there is only

room for the road and the water-conduit. Plevna, a name which recalls the heroic defence of Osman Pasha against the Russians in 1877, is the strategic centre of the west of Bulgaria. Through it run the roads from the basin of Sofia, as well as from the upper valley of the Maritsa. Sofia, the capital of Bulgaria, the ancient Serdica or Sardica, stands in the middle of a small plain. almost completely encircled by some of the loftiest mountains of the peninsula. Here the great Vienna-Constantinople highway is crossed by a branch of the famous Roman road, the Via Egnatia, which came over from the valley of the Vardar, and was continued through the gorge of the Isker to the garrison towns on the Danube. The original town of Serdica (later Sardica) . Ulpia was founded by the emperor Trajan in the first years of the second century. The name Sofia has only been in use since the sixteenth century. The Turkish baths of the town are fed by natural hot-springs, which have been celebrated for centuries.

The towns along the Danube mostly occupy picturesque sites on the edge of the plateau, many of them climbing up the face of the steep escarpment, which is crowned by the ruins of some ancient Roman castle or frontier fortress. The most notable of these towns are, in the order from west to east, Vidin, the ancient Bononia; Lom Palanka, Suištov (Svishtov, generally known in western Europe as Shishtova or Sishtova), the ancient Novæ; and Ruščuk (Rushchuk). In ancient times, below Vidin, on a site believed to be now occupied by the little village of Akčar (Akchar), stood Ratiaria, a large and important Roman town, headquarters of the thirteenth legion after its withdrawal from Dacia in 271, but destroyed by the Huns in the fifth century.

<sup>&</sup>lt;sup>1</sup> (Sofia), pop. 103,000.

## CHAPTER XX

#### ALBANIA

# 1. Main Physical Features

ALBANIA is an artificial state created by the Powers in 1913, and carved out of Turkey. After many vicissitudes during and consequent to the Great War, Albania was recognised as an independent and sovereign state in 1920. The country comprises the Adriatic coast, a transition region, from Lake Skutari, on the confines of Montenegro, to the shores opposite Corfu, and the Dinaric region behind this narrow coastal belt. It marches with Yugo-Slavia in the north and east and with Greece in the south.

The eastern boundary is roughly the watershed between Adriatic and Ægean drainage. Near it Lakes Prespa and Okhrida, connected by subterranean channels, give rise to the Drin, which flows successively north, then west, then south, and is the most considerable river in the country; near its mouth it has connection with Lake Skutari. South of the Drin the Arsen, Shkumbi, Semeni-Devoli, and Voyusa are the chief of many streams which drain the mountainous interior. The valley floors are fertile and are cultivated by the most primitive methods which obtain in Europe. Olive groves are neglected; the wooden ploughs merely loosen the soil; and large areas of suitable arable land are not tilled.

## 2. The People

The people are Ghegs of the north, and Tosks, with Greek affinities, in the south. They form a compact mass of Albanians within a state with few aliens and with few of its members in foreign lands. Two-thirds of them are Moslems. Among the Ghegs Christianity is Roman, and among the Tosks beyond the line of the Shkumbi it is Eastern; both branches of one of the most ancient peoples in Europe yet regard themselves as one people. Their culture is tribal and patriarchal; among them the vendetta survives, with the result that, as in Montenegro, none dares to achieve even comparative wealth.

#### 3. Towns and Routes

The towns are, in reality, little more than villages with markets at convenient route junctions or in the centre of fertile lowlands. Skutari alone boasts a population exceeding 20,000. Normally roads rapidly degenerate, there is no administrative authority to repair the ravages of freshets; bridges remain broken down, since the stream is often a clan boundary, and under a vendetta the bridge is no longer needed. During the War the Allies made a great road from Valona through Tepeleni and Leskovic to Koritsa, and thence to Salonica; the Italians made a motor road along an Adriatic Corniche from Valona to Santi Quaranta; these roads are fast losing their usefulness. The first of them is a reminder of the Roman Via Egnatia, which, starting from Durazzo, went through Elbasan and round Lake Okhrida to Monastir. Other roads join Tepeleni and Valona with Durazzo, from which port narrow-gauge military railways penetrate inland to meet a railway south from Skutari.

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Durazzo, for long the chief port, has a harbour choked with silt, and vessels anchor in an open roadstead. The neighbourhood is malaria-infested.

Valona, but 60 miles by ferry-steamer from Brindisi and the key to Italian aspirations towards making the Adriatic a closed sea, owes its rise to the needs of the Allies during the War. Selenitza, on the Voyusa, exports bitumen, one of the chief exports of the country.

### CHAPTER XXI

GREECE

#### 1. Greater Greece

LIKE Yugo-Slavia and Rumania, Greece 1 has recently increased her expanse of territory. Formerly confined to the Morea and only a fragment of the Pindus region, Epirus, Southern Macedonia, and Thrace have been added. In the subsequent pages the former extent will be styled Old Greece, and the term should not be confused with the Ancient Greece of classical times. Old Greece and Epirus belong to the Pindus and Mediterranean regions of Balkania, Southern Macedonia and Thrace to the eastern transition region. Greater Greece includes almost the whole of the Greeks in Europe, together with Vlachs (Rumanians) on the edge of Epirus, Macedonian Slavs in South Macedonia, and Turks in South Macedonia and Thrace. The type of culture is labelled Old Balkan or Byzantine, as distinct from the patriarchal culture of the Slavs, and it endures modifications due to typical Mediterranean influences on the peninsular shores and to Moslem influences along the Ægean littoral. Greater Greece includes Crete and nearly all the islands of the Ægean Sea.

<sup>1</sup> Greater Greece (1920): area, 42,000 square miles; pop. 5,500,000.

## 2. Old Greece—History—Occupations

Old Greece 1 passed into the power of the Osmanli Turks after the fall of Constantinople (1453), the destiny of the mainland overtaking the islands at a later date. The country was plundered in the same ruthless fashion as the rest of the Balkan states. The fate of the Peloponnesus was indeed worse; it was an object of contention between the Sultans and the Council of Venice, and suffered at the hands of both masters. But shortly after the dawn of the nineteenth century, the spirit of independence began to stir in the Greeks, and after a protracted struggle, in which the sentiment of civilised Europe was actively enlisted on the side of the oppressed, they succeeded in shaking off the yoke of the Osmanli. But the afflicted country was in great part a wilderness. The land had gone out of cultivation; the fruit-gardens and olive-groves were destroyed; the population was almost decimated, and, to escape the marauding attacks of pirates as well as to avoid the fatal malaria, had taken refuge in the more mountainous regions, away from the coasts, and the more fertile regions of the river valleys. But since the recovery of their independence, and their consolidation into a settled kingdom, the Greeks have made very commendable progress in social and economic improvement.

Notwithstanding her maritime position and her mountainous surface, Old Greece is an agricultural country. But the principal instrument of husbandry is the spade, not the plough; and of the total amount

<sup>&</sup>lt;sup>1</sup> Area previous to readjustment of frontier after war of 1897, 25,353 square miles; pop. (1879, with the addition of the census population of northern Greece for 1881) 1,979,000; (1889), 2,217,000; density, 1889, 88 per square mile; mean rate of increase per cent per annum, 1879-1889, for the area included in both censuses, 1.08.

of soil suitable for cultivation only a relatively small proportion is actually cropped. The worst cultivated and most backward district is that which was acquired last, the province of Thessaly; although the mountain slopes overlooking that plain, as well as the hilly regions on the west side of the Peloponnesus, resemble well-cultivated gardens. The causes which chiefly



ZANTE: DRYING CURRANTS.

militate against a wider cultivation of the soil are scarcity of labour, the thinness of the population, the preference the Greeks display for the learned professions and the callings of the sea, as well as the minute subdivision of land in several districts, and the antiquated methods of tillage still in vogue in all.

Though enjoying a magnificent climate, and in many places blessed with a fertile soil, the Peloponnesus, or Morea, the southern portion of Greece, is too mountainous, and too ill supplied with means of communication, to admit of a great development of agriculture and trade, and it was not until the rich province of Thessaly was added to the kingdom that Greece was able to supply her own wants in grain. The chief wealth of Greece derived from the soil consists in its southern fruits, more especially olives, figs, and the small dried grapes known as "currants," a corrupted form of "Corinths," a name given to them from one of their places of export. These small grapes are grown principally on the low hills of the west side of the Peloponnesus, up to 1150 feet, and in the Ionian Islands, especially Zante. Wheat and maize are the principal grain crops, wheat being the chief product of the plains of Thessaly. The vine is pretty well universal, growing almost everywhere up to 3700 feet. Tobacco and cotton are grown on the plains of Livadia, in Thessaly, and on other parts of the mainland, as well as on some of the islands. mountain sides and the forest regions are grazed by herds of sheep and goats. Now, as in ancient times, Thessaly breeds horses, and Attica is noted for its bees. Large herds of swine are kept in the north-west. The greater portion of the foreign trade is carried on with England, and the rest with France, Austria, Russia, Turkey. Much of the internal trade of the Ægean and the eastern parts of the Mediterranean from Alexandria to Malta is carried on by Greeks. Small sailing vessels, commanded for the most part by their owners, are the craft employed in this commerce; but they are being gradually supplanted by steamships of larger size. The fisheries in the Levant, more particularly the gathering of sponges by means of divers, are in the hands of Greeks.

Industry is not very extensively developed, chiefly owing to want of capital, and the absence of coal as well VOL. I

as of water-power. There is, however, a flourishing domestic industry, such as the weaving of textiles for home-made clothing for the peasantry. Moreover, the beginnings of manufacture exist in olive-oil refineries, silk-spinning mills, tobacco factories, shipbuilding yards (Syra), potteries (using the clays of the Kephissos), flour-mills, etc.

Communication between the east side and the west side of the country has been facilitated by the opening in 1893 of the ship-canal cut through the isthmus of Corinth. So far, however, this canal has not been used to the extent anticipated. Owners of large vessels complain of the danger of grounding, chiefly owing to the small bottom width (52 feet as against 72 feet in the Suez Canal), and it is used chiefly by small vessels: steamers with a tonnage of about 500 tons, and sailing vessels with an average tonnage between 30 and 40.

#### 3. Macedonia

The name Macedonia has ceased to be of service in modern geography. When the Turk dominated Balkania, Macedonia was Turkish, and included the Vardar valley and the area west of it as far as the fertile plain of Monastir and Lakes Okhrida and Prespa, as well as the coast of the Gulf of Salonica. In addition it extended north-west to include Ancient Serbia, the Rashka, then Turkish, and bounded by Montenegro, Bosnia, and Old Serbia. From earlier pages it will be evident that the larger northern portion of Macedonia is now included in Yugo-Slavia, with the result that the term Southern Macedonia has come into use to describe the Greek area near Salonica.

#### 4. Southern Macedonia

Southern Macedonia, the surroundings of Salouica, was once covered by the Sarmatian lake, remnants of which are gradually drying up. The high lands are blocks of the earth's crust, usually slightly tilted and sharp-edged and somewhat eroded, overlooking basins of which the silt-covered floor represents a crusted block which has sunk after fracturing off the earth's crust. The country is difficult to traverse, malarial on the marshy lowlands, and human settlement is entirely controlled by the water supply. Here are the lower reaches of the Vistritza, Vardar, and Struma.

#### 5. Thrace

The term Thrace may be used for all that part of the eastern transition region which lies south of the southern boundary of Bulgaria. It includes part of the Black Sea littoral, the Istranja Dagh, and the drainage slopes southwest from these heights to the Ergene and its parent stream the Maritsa; this is Eastern Thrace. Western Thrace comprises the section of coast-land which for a few years was Bulgarian. The department of Drama, with its port of Kavala, is counted in Southern Macedonia-Eastern Thrace adjoins Constantinople and the zone of the Straits which includes the north shores of the Sea of Marmora and the peninsula of Gallipoli.

Eastern Thrace, between Constantinople and Adrianople, is a level steppe region, bare and treeless, dotted here and there with clumps of oak scrub, in summer scorched up and swept by dust storms. The villages are few and far between. Flocks of sheep, with herds of

<sup>&</sup>lt;sup>1</sup> See also p. 743.

cattle and (as in antiquity) troops of horses, find a precarious sustenance on the sparse vegetation. The alluvial soil of the Maritsa and its tributary the Ergene, and the loess terrace which lies along the base of the Istranja Mountains, are, however, cultivated, and yield wheat, maize, sesamum, tobacco, wine.

# 6. People

The ancient Greeks, who spoke a dialect of the Indo-European or Aryan family of speech, entered Greece from the north, being at the time they did so nomad herdsmen and shepherds. As successive waves of immigration ("return of the Heracleidæ") swept over the peninsulas of the country, the original settlers, called variously Hellenes, Acheans, Danaans, Græci, and Ionians, were driven from the mainland to the islands and adjacent coasts (southern Italy, Asia Minor). The modern Greeks are a race of mixed blood. During the great immigratory movements of the early years of the Christian era Greece was overrun, and in part settled, by Goths, Avars, Slavs, and other peoples. During the thirteenth and fourteenth centuries, more particularly after the terrible ravages of the Black Death (1348), there was a large influx of Illyrians (Albanians). The Thracians also constituted a very appreciable proportion of the population at the epoch of the Roman conquest (second century B.C.). In the Ionian Islands a strong Italian leaven is easily discernible. It is from these various races that the inhabitants of modern Greece owe their descent. They speak a tongue which may be described as a degenerate form of ancient Greek. The majority of them profess the tenets of the Greek Orthodox Church

#### 7. Chief Towns of Old Greece

From the dim and distant days of the remotest antiquity there can be little doubt that the countries adjacent to the eastern waters of the Mediterraneanthe Levant—have been the seats of the highest civilisations known to man. And in all ages amongst these dwellers on the shores of the great inland sea there have been nations eminent as seafarers. For such a maritime race the southward extension of the Balkan Peninsula, with its deep gulfs, its highly diversified coasts, its numerous little harbours, and the multitude of islands which beset the seas around its shores, seems the predestined and peculiar home. History fully justifies the deduction. For from the earliest period of which we have authentic historic data the inhabitants of Greece have been men of the sea; traders, however, rather than seafarers; landsmen addicted to travel by sea rather than navigators of trackless oceans. The ancient Greeks were long believed to have been the first civilised inhabitants of the complex of peninsulas and islands which they occupied at the dawn of history, as history used to be understood. The ancient Greeks had, it is true, traditions of a still earlier race whom they called Pelasgi or Pelasgians. But of the Pelasgi or Pelasgians we have next to no trustworthy information. Archæological discoveries in quite recent years in the peninsula of Argolis (at Mycenæ, Tiryns, etc.), and in the island of Crete, seem to show that these regions were at one time—and in all probability at a time anterior to the Greek civilisation—the centres of a race which could with some fair degree of justice claim to have been civilised.

At the dawn of authentic history, however, the Greeks were the dominant race in these southern lands of the Balkan Peninsula; and from an early date the city of Athens, near the north shore of the Gulf of Ægina, played the principal rôle in the politics of that part of the world. We say the city of Athens rather than Attica, for, as Seeley has pointed out,2 the physical structure of Greece conduced so much to independent city life that, as their very language shows, the Greeks were scarcely able to conceive a state as distinguished from a city. Athens occupied a position giving easy access to the sea, and at a spot whence those regions in the neighbourhood which at that time were richest in the natural products of the soil or in the works of men's hands, could readily be reached. The Cyclades, immediately outside the gulf, are so many stepping-stones towards the fertile coasts of Asia Minor, where, at a remote period, the Greeks planted independent city colonies, some of which rose to wealth and fame, and became the mothers of other city colonies in the Black Sea and remote parts of the Mediterranean, even before any of the cities of Greece itself had made the first notable steps in their advance to the place which they ultimately came to occupy in history. Athens does not stand immediately on the seashore. The shore is low and swampy. Athens was built at the commencement of the higher ground immediately beyond the swamps, the choice of the site by the first founders of the city having been no doubt determined by its proximity to the hills of the Acropolis, Lykabettos, and Strephon, whose summits and steep sides

<sup>2</sup> Expansion of England, 1883, pp. 40, 41.

<sup>&</sup>lt;sup>1</sup> (Athens), pop. (1861), 41,300; (1870), 44,500; (1889), 114.400 (comm.); (1896), 111,500; (1907), 170,000; (1920), 293,000.

would afford a considerable measure of natural defence. The real port of Athens is Piræus,  $4\frac{1}{2}$  miles to the south-west, built on a peninsula (originally an island) between two good harbours. It is the harbour on the west which has been, and is still, used for vessels from the time of the Athenian statesman Themistocles (fifth century B.C.). He it was who first deepened, widened, and walled round the natural basin which subsequently became the harbour of Piræus. In the Middle Ages it was known as Porto Leone or Draco, from the stone images of a couple of lions which adorned the entrance to the harbour. The port and its fortifications were destroyed by the Roman general Sulla in 86 B.C. Thence for eighteen hundred years it ceased to be of any real importance, and at the time of the war of independence (1821-28) there was not a single house left standing on the peninsula. Since then, however, Piræus has been rebuilt, and has grown with great rapidity. The roadstead which stretches west from Piræus to the island of Salamis is large enough to hold several fleets of modern battleships. It was there that the fleet of Xerxes was destroyed by the Athenians in the end of the fifth century B.C.

It is impossible in this place even to enumerate the many stirring events of which Athens has been the scene. To do so would be to recount the history of Greece wellnigh in its entirety. It must suffice to observe that Athens will to the end of time be regarded as one of the cradles and shrines of human culture, intelligence, and art, and will consequently possess an undying interest, however unfavourably the present may compare with the past. Many of the glorious remains of antiquity are still preserved, conspicuous amongst them being the Parthenon and the Propylea crowning the Acropolis,

<sup>&</sup>lt;sup>1</sup> (Piræus), pop. (1889), 34,600 (comm.); (1907), 74,000; (1920), 131,000.

ATHENS AND THE PIREUS.

with the temple of Theseus at its foot. Approached from the sea, the city and its surroundings present a sight of striking beauty, the marble pillars of the Parthenon sparkling in the sunshine, as if in rivalry with the snowy crest of the distant but still visible Parnassus. Before reaching Salamis or Ægina we command a prospect



THE ACROPOLIS, ATHENS.

of the west coast of Attica in its entire length, as far as the dazzling white cliffs of Sunion, Athens itself appearing as if encircled in a chain of hills—the heights of the Acropolis in the foreground, Mount Lykabettos in the mid distance, and in the background the loftier summits of Hymettos on the right, Parnes to the left, and Pentelicos in the centre. The relative altitude of these chains (3370 to 4640 feet above sea-level) can be estimated at this distance far better than from Athens

itself. Nor from any other point does the temple of Athene, which likewise adorns the Acropolis, produce such an overpowering effect on the imagination as here; for, although no other structure can be detected, the very pillars of this imposing edifice may be counted as they shimmer in the sun.

As we draw near Piræus, the panorama changes. The grand proportions of Pentelicos and Parnes, in spring still deeply covered with snow, disappear behind the lower but more advanced hills, and presently Hymettos alone remains in view. Athens, and even the Acropolis, become lost to sight, and are not seen again until we approach the capital by train. Modern Athens, which is built on the east and north of the Acropolis, not like the ancient city on the west and south, wears very much the outward appearance of a half-German, half-Slavonic town in Poland or the Baltic provinces of Russia. But around this quarter a newer one has been built with broad streets and boulevards planted with trees, and adorned with a number of public buildings, some of them handsome and imposing.

Corinth, occupying a specially favoured situation at the foot of an almost impregnable rock, nearly 2000 feet high, on the narrow isthmus between the two great indentations which almost cut middle Greece into two, was in ancient times a large and prosperous city, famous for its commerce, its manufacture of works of art, and for the seamanship of its people. After the destruction of Athens by the Romans it flourished more than ever, having attracted to its ports (of which it had three) the trade of Athens and of Delos. The city continued to enjoy a measure of commercial prosperity until the last

<sup>&</sup>lt;sup>1</sup> See below, p. 728.

conquest by the Turks early in the eighteenth century. After the Greeks won their independence, it began rapidly to revive, until in 1858 it was overwhelmed by a most destructive earthquake. At present it is little more than a large village, but the opening of the canal through its isthmus (1893) has not materially affected the



CORINTH.

town, as the traffic through this canal is insignificant, being confined almost entirely to coasting steamers. The American Archaeological Society has made considerable excavations on the site of the ancient city which was ravaged by Goths, Slavs, and Franks at different times. The new city is three miles from the ancient site.

The ancient city of Argos, situated about 3 miles from the head of the Gulf of Argolis or Nauplia, was one of the very oldest cities in all Greece, and for a long

period the capital of the dominant state in the Peloponnesus. Seven miles to the south-east of it is Navplion or Nauplia, the first capital of the new kingdom of Greece. Sparta or Lacedæmon, the ancient rival of Athens, and the supplanter of Argos as the principal city in the Peloponnesus, stood on the banks of the Eurotas, in a valley capable of easy defence, towards the south-east of the peninsula. The Spartans, who virtually occupied a standing military camp in a country kept in subjection only by their sword and their spear, after winning the proud position of the masters of all Greece from the Athenians, were crippled successively by the Thebans, the Macedonians, and the Romans. When the Franks established themselves in the Morea in the early years of the thirteenth century, one of their chieftains (William de Villehardouin) founded the stronghold of Misthra, and built it up with the stones of ancient Sparta. This place played an important part in the politics of the Morea all through the troublous period of two hundred and fifty years, during which the Venetians and the Turks contended for its mastery. It was eventually (in 1825) destroyed by the latter; but in 1834 the new Greek government ordained that the village of Sparte should be built nearly on the site of the ancient Sparta, and with the stones of the ruined Misthra. Such is the matchless irony of circumstance!

The middle peninsula of the three which project south from the Peloponnesus is the notorious Maina, whose inhabitants, driven into piracy by the tyranny of the Turks, in turn drove the more peace-loving people from the coasts to the mountains, and thus no doubt caused a good deal of the increase in marshy, and consequently malaria-stricken, districts around the coasts of Greece.

On the west coast of the Morea, Methōnē (or Modhoni) and Korōnē have both had a chequered history, but are now insignificant places. A few miles north of Modhoni is the small bay of Navarino, in which the Turkish fleet was annihilated by the allies of the Greeks in 1827. Pyrgos, a strenuous little modern town, standing near the mouth of the Alpheios, has grown up in the neighbourhood of the ancient Olympia, the gathering-place and arena of the finest athletes of antiquity.

At the east side of the Gulf of Patras, shortly before it narrows to connect with the Gulf of Corinth, the ancient Achaen city of Patras 1 still survives and flourishes as the chief place of shipment of currants. The ancient town was devastated repeatedly by earthquakes and sieges. The present town, new and handsome, has been built since it was destroyed and burnt to the ground during the war of independence (1822). On the north side of the entrance to the Gulf of Corinth is the small town of Naupaktos or Lepanto, now locally called Epakto, one of the chief naval stations of the Athenians in the Peloponnesian war, and during the Middle Ages a fortress of great strength held by the Venetians. Near this place the fleets of the leading Christian states of the Mediterranean, under the command of Don John of Austria, on 7th October 1571, won over the Turks one of the most glorious naval battles on record—a fight in which Cervantes, the author of Don Quixote, lost an arm. About 20 miles to the west of Naupaktos is Missolonghi or Mesolongion, built on a swampy flat, where Lord Byron died (1824), whilst assisting the cause of Greek independence, during the

<sup>&</sup>lt;sup>1</sup> The accusative case of its proper Greek name of Patrai. Pop. (1861), 18,300; (1889), 45,000 (comm.); (1907), 38,000; (1920), 52,000.

second siege by the Turks. Off Actium, the low headland at the southern entrance to the Gulf of Arta, the fate of the Roman world was decided in 31 B.C., in a memorable naval encounter between Augustus and Anthony.

Dodona, 8 miles south-west of the modern *Yanina* in Epirus, and Delphi, on the southern slope of the Parnassus range, although household words of sacred import to the ancient Greeks by reason of the oracle which each possessed, were not populous places.

The plain of Bœotia, however, lying to the west of Attica, was in ancient times the seat of a large population, gathered in several cities which figure prominently in history, above all Thebes, till in 336 B.C., to punish its resistance, Alexander of Macedon destroyed it, though not utterly, for

The great Emathian conqueror bid spare The house of Pindarus, when temple and tower Went to the ground.

At the present day, *Thebes*, like her neighbours of ancient days, Platæa, Thespiæ, Tanagra, and other towns of note in the Bœotian plain, is a place of little or no importance.

In Thessaly, although the plain is so fertile, the population is densest on the hills surrounding it; the people having taken refuge there, especially on the east side around Mount Ossa and Mount Pelion and in the rugged peninsula of Magnesia, from the exactions of the Turks. The plain is not, however, without towns. Larissa 1 and Trikkala, 2 both considerable places in antiquity, and the largest of the modern towns of Thessaly.

 <sup>(</sup>Larissa), pop. (1889), 15,900 (comm.); (1907), 18,000; (1920), 21,000.
 (Trikkala), pop. (1896), 21,100; (1907), 18,000; (1920), 20,000.

stand in central situations at the intersection of the principal routes over the Pindus mountains into Macedonia and Epirus. The site of Larissa was determined, as was the selection of site for so many of the old Greek cities, by the presence of an isolated and easily defensible hill. Volos, or Volo as it is pronounced and generally spelt, the modern port of this northern part of Greece, is a rapidly growing town at the head of the spacious Gulf of Volos.



MOUNT OSSA.

## 8. Chief Towns of New Greece

The prosperity of the numerous Greek colonies on the northern shores of the Ægean, on the Hellespont, and the Sea of Marmora (Propontis), was in part checked, in part destroyed, and yet again in part quickened with a new stimulus by Philip of Macedon, father of Alexander the Great. Olynthos at the head, and Potidæa at the north-west corner, of the Gulf of Kassandra (the ancient

<sup>&</sup>lt;sup>1</sup> (Volos), pop. (1896), 16,200; (1907), 24,000; (1920), 30,000.

Sinus Toronaicus), and Amphipolis at the mouth of the Struma (Strymon), at the head of the gulf to the east of Chalcidice, were all destroyed by him, though Potidea afterwards rose again, through the care of Cassander, successor of Alexander the Great, under the name of Cassandrea, which still survives in the modern name of the gulf, and Amphipolis under its original name, both being flourishing places under the Romans. But Philip was not only a destroyer, he was also a founder of cities. On the site of an old Greek colony, Krenides, he called into existence Philippi at the south-east end of the plain of Drama, at a spot where it could control the extremely valuable gold-mines of Mount Pangaion (between the lower course of the Struma and the lower course of the Kara-Su). Previous to his time, Edessa (or Ægæ), now Vodena (between Salonica and Monastir), had been the capital of Macedonia. He transferred the royal residence to Pella, a town lying 25 miles farther east. In his time the predecessor of the existing town of Monastir, known as Herakleia Lyncestis, also as Pelagonia, was a place of considerable importance.

Several of the towns which have been mentioned above were built upon, or beside, the great military highway, or highways, between Rome and Byzantium, the famous Via Appia and Egnatia, and their consequence in Roman times is like that of Aquileia, Sirmium, and others on a more northerly route, a sign of the importance of the east-west connections of that epoch. The Via Egnatia, starting from Dyrrhachium (modern Durazzo and Draé), passed through Lychnidos (one of the capital cities of the Illyrians, occupying the site of the modern Okhrida), Herakleia Lyncestis, Edessa, Pella. Thessalonica, Amphipolis, Philippi, Perinthos

(known from the fourth century as Herakleia, now *Eregli*), and so finally reached Constantinople.

After the Slavs became thoroughly settled in Balkania, the three chief centres of population were in Bulgaria (capital, Trnovo); in Constantinople, the residence of the Byzantine emperors; and Rasa, or Rascia (the modern Novi Pazar), the Serbian capital. But in the middle of the fourteenth century a fourth centre was established in Adrianople; for the Ottoman Turks took possession of the Maritsa valley, subdued much of the peninsula, and finally destroyed the Byzantine empire in 1453.

Salonica<sup>1</sup> (Turkish Selanik) was the ancient Thessalonica, the capital of Mace-

<sup>1</sup> (Salonica), pop. (approx.) 170,000.



A DAME OF

donia from the end of the fourth century B.C. Not only is it a centre of convergence for some of the most important routes which cross the Balkan Peninsula from north to south and from east to west; it is also the chief seaport for its own province as well as for Serbia, western Bulgaria, and part of Bosnia. It labours, however, under the disadvantage of not possessing a good harbour; it has only a sheltered roadstead in the gulf. It is a place with a certain amount of manufacturing industry-tobacco, flour, soap, cotton. The town rises from the harbour in a series of terraces which are capped by the ancient citadel, the White Tower. It occupies an important strategic position at the mouth of the Vardar valley with railway connexion to Belgrade. Its population is very heterogeneous; but somewhere about two-thirds are Jew, descendants of those Jews who were banished from Spain in 1571, and speak a corrupt variety of Spanish.

The principal town in eastern Macedonia is Seres, 45 miles north-east of Salonica, east of the Struma and north of the Takhino-Göl, a town at least as old as the invasion of Xerxes (480 B.C.), when it was known as Siris or Serrai.

### 9. The Ionian Isles

Off the western coast of Greece lies the group of the Ionian Isles. After being subject to Venice for a period of nearly four hundred years,1 they eventually passed (1807-1815) under the protection of Great Britain, who finally ceded them to the kingdom of Greece in 1863. They stand on a subterranean platform, with an average immersion of 600 to 700 feet, and close to the edge of

<sup>1</sup> Hence the Italian names which have become so generally used in the west, though not officially recognised in Greece.

the deep portions of the Mediterranean. They are built up partly of limestones (especially prominent in Cephalonia), partly of Pliocene marls, sandstones, and conglomerates (more particularly Zante and Corfu). Their eastern coasts are as a rule the more thickly populated, being that side of the islands which is the more accessible, as well as the more broken by bays, and the more fertile. On Cephalonia (in Greek Kephallēnia), one of the two largest of the group, Monte Nero, or Elato, the ancient Oinos the culminating point of the whole archipelago—rises to an elevation of 5310 feet. It is notable that near Argostolion, in Cephalonia, streams of sea-water pour steadily into the land through fissures in the limestone in sufficient volume to be used for the driving of mills. Corfu (in Greek Kerkyra) is a fertile island of about the same size as Cephalonia. It approaches within a mile and a half of the coast of Epirus. Zante, or Zakynthus. like Cephalonia and others of the archipelago, derives its wealth from the dwarf grapes which are known in commerce and domestic use as currants. It also possesses bituminous springs, and in this island factories have been established for obtaining oil from the refuse of the oliveoil mills. Santa Maura, or Leukas, so called from its white cliffs, is severed from the mainland by a channel too shallow for any but small vessels. Its southern end terminates in the romantic cliff known as Sappho's Leap, so named after the great poetess of ancient Greece. Ithaca will be imperishable as long as men read the story of the Odyssey. Paxos, with Antipaxos, between Corfu and Leukas, combine with Cerigo or Kythera and Cerigotto or Antikythera, both making stepping-stones between Crete and the peninsulas of the Peloponnesus, to

<sup>&</sup>lt;sup>1</sup> Monte Nero = Black Mountain; Elato Vouno = Pine Mountain. Both names refer to the pine-forests with which the mountain is clad.

complete the association of islands which are grouped together under the political name of Ionian Islands—a name, it may be remarked, of purely modern usage.

The Ionian Isles are remarkable for their beauty and fertility, but are subject to frequent earthquakes. Windmills crowning the lower hills are a characteristic feature of the islands.

The principal towns of the Ionian group are nearly all situated on the eastern shores, looking towards the mainland of Greece. All are lively little seaports, exporting currants, with the single exception of Corfu, the staple of which is olive oil. On Corfu the houses are tall and the streets narrow, as in Italian towns. In Cephalonia and Zante, on the other hand, the houses are low and small because of the earthquakes. Corfu is the ancient Coreyra, a colony of Corinth, which, by reason of its commercial success, became so rich and powerful as to provoke the jealousy, and even the active hostility, of the mother city. Its power declined shortly after the Peloponnesian war, about the middle of the fifth century, after a period of some three hundred and fifty years of prosperity.

For fifty years subsequent to 1814 the islands were under British protection, and market-gardening became a temporary occupation of the people on the neighbouring mainland. In 1915-16 Corfu was occupied by the Allies as a refuge for the disorganised Serbian army, and was for a time the seat of the Serbian government.

# 10. Eubœa

This, the largest of the numerous islands belonging to Greece, was at one time united with the mainland. At the present time, as the result of an ancient geological

fault, it is separated from it by a long, narrow channel, known to the ancients as the Europos, and to the moderns as Atalante or Talantian Euripos (the northern half) and Eritrēa (the southern half). For towards the middle it contracts so greatly that Chalkis, the capital of the island, standing on the west coast, has from antiquity been connected with the mainland by a bridge. High water is frequently observed to occur in the Euripos several times in the course of the same day. At Chalkis it has been counted up to fifteen times. The island, which turns a steep, bold face to the Ægean, is decidedly mountainous, its culminating point being Mount Delphi, the ancient Dirphys, 5725 feet, and is mostly built up of Cretaceous limestones and Tertiary deposits. The soil is fertile, and produces corn, wine, and cotton. Many cattle, sheep, and goats are reared and fed. Although 115 miles long, the island barely measures 30 miles across in its widest part. The names Negripo and Negriponte, sometimes applied to both the island and its chief city, are corruptions of Evripo, the Greek pronunciation of Euripos.

# 11. The Cyclades and Sporades

Greece claims authority over close upon three hundred islands in the Ægean alone. Of these more than two hundred—whose aggregate area, however, is only about 1000 square miles—are grouped together under the common name of the Cyclades,<sup>2</sup> so called because to the mind of the ancients they appeared to form a circle (cyclos) round the sacred island of Delos. A more

<sup>&</sup>lt;sup>1</sup> This remarkable phenomenon is discussed scientifically in *Petermanns Mitteil.*, 1888, p. 331, etc.

<sup>&</sup>lt;sup>2</sup> (Cyclades), pop. 130,000.

accurate, as well as a more scientific, conception is to represent them as the highest elevations of three submarine mountain chains, continuations in a south-east direction respectively of Eubœa, Attica, and the eastern prolongation of the Peloponnesus. On the east and on the south of them the sea sinks with extraordinary steepness to very great depths. The islands are for the most part bare and rocky, and lacking in water, but abounding in caves and coves and high shelves of seacliff, circumstances which formerly favoured the pirate bands who, under Turkish supremacy and tyranny, infested the Ægean. The southern islands of the group are principally volcanic in origin. Santorin, the ancient Thera (a name officially revived), together with the smaller island of Therasia, is indeed the surviving portion of a vast crater, the centre of which has fallen and been engulfed beneath the sea. In historic times it has been the scene of several volcanic outbreaks, more notably in 196 B.C., in 1573, 1707, and 1866. Another volcanic island is Melos, which is rich in minerals. Its clay, alum, sulphur, and obsidian were much valued by the ancients; and at the present time sulphur, manganese, gypsum, salt, and argentiferous barytes are extracted from its surface. Here, again, prehistoric sites have been uncovered, and it was from them that the priceless gem of ancient Greek sculptor's, work, the Venus of Milo (Mēlos), was discovered. One other island of the group is a mineral-producer, namely, Seriphos or Livadion, which yields abundance of iron ore of excellent quality. Paros was particularly famous in antiquity for its white marble, widely used for statuary. The quarries are still worked. The largest island of the entire group is the well-watered and fertile Naxos, anciently famous for its wine, and for that reason sacred to the cult of Dionysos.

It also yields large quantities of emery, an admixture of alumina, oxide of iron, and silica, a very hard material highly valued as a polishing agent. Milra Delos, the smaller of two islands so named, was, in the period of the classic Greek civilisation, sacred to the worship of Apollo, who had here an oracle famous throughout Greece. On its soil was held, every fifth year, a solemn festival to the memory of the god. Owing to this and to the further fact that there was a good harbour on the island, which lies conveniently midway between Asia Minor and the Peloponnesus and central Greece, Delos was in ancient times an important commercial centre, especially for the traffic in slaves. Its place as the chief commercial emporium in the southern part of the Ægean has been taken, more especially since the war of Greek independence in the first quarter of the nineteenth century, by Syra, lying some 20 miles to the west.

The Sporades or "Scattered Islands" which belong to Greece number between seventy and eighty; but most of them are of insignificant size. They lie north of Eubœa. The only one of them that deserves special mention is Skyros, which in antiquity was famous not only for its associations with the heroes Achilles and Theseus, but also for its goats and its supplies of variegated marble.

# 12. Crete or Candia

Crete (Turkish Kirid), or Candia, the largest island in the eastern end of the Mediterranean, is intimately connected with Greece by its physical characters no less

<sup>&</sup>lt;sup>1</sup> Candia is the Italian form of Khandax, the Saracenic name of Megalokastron, one of the chief cities of the island. Area, 3120 square miles; estimated pop. 294,000, or 88 to the square mile.

than by its political and ethnological relations. The backbone of the island is a mountain-chain running from east to west, and composed for the most part of hippuritic limestones belonging to the Cretaceous epoch. Indeed, creta (Latin), from which the Cretaceous system takes its name, is an applied meaning of the name of this island.<sup>1</sup>

The island of Crete is about 165 miles in length, and varies in breadth from 6 to 35 miles. It comprises four mountain masses separated by three depressions. Low-lands suitable for settlement occur on the coast near Canea, in the Messara, south-east of Psiloriti. About one-third of its surface ranges from 2000 to 5000 feet in height, and above that elevation among other altitudes rise—Ori Madaras (8105 feet), Psiloriti, the ancient Ida (8060 feet), and Lasithi (7090 feet). Caves are very numerous. One on the slope of Mount Ida, very large in area, is supposed to have been the lair of the fabulous Minotaur.

The climate is, on the whole, very beneficial to health, the heats of summer being tempered by a northern wind. The soil is exceedingly fertile, but ill-cultivated. The principal products are the olive, vine, orange, lemon, carob or locust bean, and other fruits. Valonia, a substance used in tanning, is obtained from oaks growing near Retimo. The best wine is made from grapes in the district of Malevisi, near Candia—a district which gave its name to the famous Malvoisie or Malmsey of the later Middle Ages. One of the most important productions of Crete is soap, made from olive oil. Among the animals of the island may be mentioned the Cretan ibex (Capra Egagrus).

The principal towns are planted on or near the north

<sup>&</sup>lt;sup>1</sup> See Introduction, pp. 33 and 34.

<sup>&</sup>lt;sup>2</sup> For a description of the district in which this goat occurs, see *Short Stalks*, Second Series, by E. N. Buxton (1898), pp. 152, etc.

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coast, and have useful but small harbours. The only safe and convenient anchorage for large ocean-going steamers at all seasons alike is found in the spacious but deep Suda Bay, near the west end of the island. The south coast is generally rocky and inaccessible.

The bulk of the people belong almost exclusively to the Greek race. But one-tenth of them are Mohammedans. a declining people living for the most part in the towns and on the narrow coast plains. This division of the population between two rival religious creeds, formerly aggressively hostile to the other, kept the unhappy island in an almost constant ferment of internal strife for generations. The Christians, who are adherents of the Greek Orthodox Church, like their brothers-in-blood in the kingdom of Greece, naturally turn to them for moral and material support. Acute disturbances having broken out in 1895, the four naval powers, Russia, England, France, and Italy, in 1897 set up a blockade of the island, and made other efforts to maintain order. Finally, in 1898, they appointed Prince George, the second son of the King of Greece, as their High Commissioner for three years, to establish, under the suzerainty of the Sultan, and in accord with a Cretan national assembly, an autonomous system of administration, giving security to life and property, and the free exercise of religion.

The island passed to Greece in 1914. Since 1900 excavations at Cnossus and Phæstus have brought to light evidences of the earliest European civilisation. Stone age people had learnt the arts of pottery and metal construction by 3000 B.C., bronze-working and frescoes characterised the period 2200 and 1600 B.C., the middle Minoan Age. Even after invasions Crete art in 800 B.C. excelled that of neighbouring lands.

### CHAPTER XXII

#### TURKEY

### 1. Constantinople

DURING the present century the confines of Turkey have been re-arranged again and yet again; time alone will show whether the present boundaries possess any elements of permanence. Probably the controlling factor is the location of the capital city.

There is not a city in Europe which can vie with Constantinople 1 for the beauty of its situation, the charm of its surroundings, its immense strategic importance, its rich and marvellous historic associations, the glamour of its prestige, its name, and the romantic memories it evokes. Lisbon and Naples possess beauties of landscape; Rome is as wealthy in historic memories; Paris has a name as powerful to fire the imagination with; but each and all of them lack the unique combination of qualities which have made Constantinople, the Stambul 2

<sup>&</sup>lt;sup>1</sup> (Constantinople), pop. (1885), 875,000.

<sup>&</sup>lt;sup>2</sup> The most reasonable explanation of this name, Stambul or Istambul, is that it is a Turkish mispronunciation of Constantinople. The Turks themselves connect it with Islambol (meaning "Islam abounding"); whilst some European authorities believe it to be a corruption of the Greek  $\epsilon$ ls  $\tau \eta \nu \pi \delta \lambda \iota \nu$  ("into the town").

CONSTANTINOPLE.

of the Turks, one of the greatest cities on the face of the earth. Founded originally, it is believed, by one Byzas, at the head of followers from the Greek cities of Argos and Megara, in 657 B.C., it was, under the name of Byzantium, for a period of above nine hundred years only one among several flourishing commercial ports which the Greeks had all round the shores of the Balkan Peninsula. But in 330 A.D. the imperial insight of Constantine the Great led him to choose it as the future capital of the Roman world. Three hundred and fifty years later it was enlarged and improved with many handsome buildings by Justinian. In the course of its long history it has been besieged many times, and captured more than half a dozen. Of the ravages inflicted upon it by enemies none was so disastrous and so destructive as when it fell into the hands of the west European crusaders under Baldwin, Count of Flanders, in 1204. Even the Turks were neither so ruthless nor so barbarous when they conquered the city in 1453.

Constantinople stands at the meeting-place of two continents, at the confluence of two seas. On the land side it can be easily defended, seeing that it is built at the extremity of a peninsula which is only  $3\frac{3}{4}$  miles across from sea to sea. By water it can only be approached through the long but narrow channels of the Dardanelles and the Bosphorus, which readily lend themselves to the construction of very formidable works of defence and fortification. It has the richly productive regions of the Balkan Peninsula and the basin of the Danube on the one side of it, the corn-growing regions of southern Russia on another, the prolific soil of Asia Minor and the Euphrates-Tigris valleys on a third, and on the remaining side all the lands of the Mediterranean

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region, lying, as it were, almost immediately outside its doors. The wise foresight of the great Constantine was abundantly justified by the subsequent history of the city he in such an especial manner honoured. Constantinople became the rival of Rome, and in later times Myklagaard, "The Great City," as it was emphatically and justly called by the bold Northmen, the emperor's palace guards, the Varangians.

The original Greek colony was built near the extremity of a hilly peninsula which projects across the southern entrance of the Bosphorus, and is lapped on the south by the wavelets of the Sea of Marmora, and bathed on the north by the still waters of the little inlet of the Golden Horn. Like Rome, it stands on seven hills, and is shut in on the west by a wall which dates from the time when the invading Goths and others began to threaten the capital of the Byzantine emperors. It is in this, the oldest part of the city, that the chief architectural glories of Constantinople are preserved—the mosque of St. Sophia, originally a Christian church, which owed its existence to the virtual creator of the city, Constantine the Great; the mosques to the memory of Sultan Suliman the Conqueror, Mohammed II., and Ahmed I. The domes and slender minarets, so full of airy grace, of these and other religious buildings lend a romantic appearance to the city. The most notable survivals of ancient Greek architecture are the ruin of the Hippodrome and the smaller monuments in and adjacent to it. The great gate (Sublime Porte) of the palace of the old Seraglio supplied a common diplomatic name for the government of the Sultan. In spite of these venerable, and, in some cases, imposing structures, Constantinople no longer possesses the same features of Oriental quaintness and charm which used to be its characteristic

attraction for European visitors. The old Turkish fashion was to build the houses of wood. Frequent fires, more particularly one which occurred in 1870, have



From a Photograph by Abdullah Frères, Constantinople,

swept away very many of the narrow, tortuous, ill-paved, unsayoury streets which constituted the real substratum of the romantic glamour of the place.

"The first impression of a visit to Stambul is distinctly

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disappointing, though this sensation wears off as one discovers how much of the bygone charm still lingers in out-of-the-way corners, and that the Mohammedan population is merely masquerading, after all, in the European garb, which neither fits nor suits it. Alas! the Stambul of the 'good old times' is but a memory, which old residents who kindly escort you to see the sights fondly conjure up, involuntarily destroying much of your pleasure, as they assure you how infinitely more characteristic and picturesque things were even so lately as when Abd-ul-Aziz reigned in Turkey.

"Not the least regrettable of the many changes the capital of Islam has undergone in the past fifteen years is the almost total disappearance of the Eastern dresses, which, with the mosques and their minarets, once gave the city that romantic air which poets have sung in almost every language under the sun. With the many-hued caftans, the huge turbans, the yellow shoes, and flowing robes, the quaint arabas, the sedan-chairs, and the litters, which, together with innumerable horses, were formerly the only means of locomotion known to the Turks, have utterly passed away. The railways, by altering the commercial conditions of the city, have diverted the routes of those caravans of camels which erstwhile added their touch of barbaric colour to the narrow streets, and to the spacious square, facing the Imperial mosques. Now and then, in an out-of-the-way quarter of the town—by the great mosque of Sultan Selim, for instance—you may chance, even yet, on a dozen small camels, laden with charcoal, emerging in single file from some precipitous lane, but such a poor show will hardly console you for the absence of those interminable chains of mighty, ungainly creatures, laden with merchandise from Asia Minor, which once filled

the streets of the Sultan's city, sorely to the inconvenience, it may be, of the ordinary passer-by, but greatly to the delight of the traveller seeking the

picturesque." 1

But Constantinople is not confined to the peninsula of old Byzantium. On the opposite side of the Golden Horn, and connected with it by a couple of bridges, are the populous suburbs of Galata, Pera, and others. Galata, virtually a creation of the Genoese in the early years of the thirteenth century, was, and is still, a place of great commercial activity. Pera, which is the residential quarter for the diplomatic corps and the aristocratic world, climbs up the hill behind Galata. Farther to the north-east, and overlooking the Bosphorus, are the former Imperial palaces of Dolma-Bagche and Yildiz Kiosk. Indeed, the shores of the Bosphorus throughout "their entire length of 12 miles from Constantinople to Buyukdere, near the Black Sea, the summer quarters of the ambassadors, form one continuous town of houses and pavilions, kiosques, mosques, baths, and coffee-houses. The gardens climb up the hillsides, terrace above terrace, till they touch the cypress-groves of the cemeteries on the top. A good road along this coast would make one of the finest promenades in the world." On the Asiatic side, too, there is a similar, though not quite so continuous a chain of villas, hamlets, suburban groups, culminating in Scutari (Turkish Sküdar), almost immediately opposite the mouth of the Golden Horn. inlet, which runs north-westwards for about 5 miles, is one of the most magnificent harbours in the world, spacious enough to hold a host of warships, and with water deep enough for them to approach quite close to

<sup>&</sup>lt;sup>1</sup> The Sultan and His Subjects, by Richard Davey (London, 1897), vol. ii. pp. 308, 309.

THE BOSPORUS Kara Burun Baba ya Hashiren Gelengir Harrio k Raidh Toshirkai Arnair Bokin Izedin Milish Harrasso Bogha kai Proti Drakobavan Antigona Prinkipo

Plati PRINCES

Plati PRINCES

Plati PRINCES

Plati PRINCES

Prinkipo

Antigona Marrilla Marrilla Practical Pra I tel Burun E Dorredne A OF MARMORA C Elken Kaya Tr. Fr TEski Hisar GULF OF Scale of Miles Chatal Burum 1000 Bejod Long. E. of Greenwich Stanford's Geogl Es



land. Its shores, too, are lined with suburbs and hamlets, amongst them Chasskoi, the special residence of the Jews and Armenians; Fanar (Phanar) the centre



VIEW OF THE PALACE OF DOLMA-BAGCHE.

From a Photograph by Abdullah Frères, Constantinople.

of the Greek population, and the originator of the name Phanariote, applied commonly to wealthy Greeks employed in influential positions in the Turkish empire, VOL. I such as the viceroyalty (voivodeship) of Wallachia or Moldavia; and, at the head of the inlet, the picturesque village of Eyub, in which is the mosque where the new sultan was solemnly invested with the sword of Osman or Othman, and beneath which is believed to rest the uncorrupted body of the Arab saint, Abu Eyub Khalid Ensari, the champion of the Prophet, who perished here during the fruitless siege of Constantinople by the Arabs in 672. Close by debouches the Valley of Sweet Waters, the favourite resort on a Turkish holiday.

"The beautiful 'Sweet Waters of Europe!' No, surely they are not beautiful! and the waters are certainly the reverse of sweet! They are as sallow, too, as the stream of the Thames between London Bridge and Westminster. Their channel is narrow, and the hills on either side of it are brown and bare. Yet at certain moments the Sweet Waters of Europe are transfigured; in April, for instance, when the meadows on either side are white and golden with snowdrops and jonquils, and you may gather great basketfuls of violets and primroses under the old plane-trees.

"Then, on Friday afternoons in May, the gaudily-dressed Turkish women come and cluster on the sward, and spread their carpets, and bask in the sunshine; and through the windows of the broughams drawn up in line under the great plane-trees the fair ladies of the Imperial Palace peep at the passing crowd from the folds of their snowy yashmacs. Alas! only thirty years ago, instead of sitting in those broughams, their Highnesses and Excellencies displayed themselves on the embroidered cushions of their arabas (carts), and eunuchs in full Oriental costumes rode backwards and forwards on the finest of Arab horses, jealously guarding, or making-believe to guard, the fair, forbidden fruit these monstrous ugly

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wretches have in charge! Now the eunuch sits on the box like any other footman, white or coloured, save that he wears a fez instead of a cockaded hat, and your friends assure you, regardless of the shock to your feelings they inflict, that the ladies wear Redfern's tailor-made gowns, and sport the latest Paris fashions under their feridjés.

"Still, the Friday crowd at the Sweet Waters of Europe is amusing, and, as you sit and sip your coffee at one of the innumerable booths, generally under the direction of a lively Armenian, you get many a quaint

glimpse of Oriental life and manners. . . .

"But presently—suddenly, almost as if by magic—the crowd disperses, and the Turkish women hurry homewards in all directions. Sunset is at hand, so we will swallow our last cup of coffee, re-enter our caïque, and Hamid shall row us slowly home. Now it is that the Sweet Waters of Europe assume their most enchanting aspect. We may have thought them hideous as we came. We think them lovely now. The magic touch of the sinking sun has changed the dross to gold. The ugly brown hills are violet and pink; the factory chimneys stand out like columns of ebony against an opal-tinted sky; the muddy Sweet Waters, as they join the salt wavelets of the Golden Horn, ripple with discs of gold; the very rushes that rise out of the waters have turned to emerald spears; the sky, in which the sun has rapidly sunk, is of such a vivid orange, shading off into such infinite and exquisite tints of blue, amethyst, and ruby, that I defy the mightiest artist of any time to transfer them to his canvas. Caïque after caïque glides swiftly past, the mandolines tinkle, and the long-drawn nasal cadenzas of Eastern music, attenuated by distance, sound almost pleasantly through the growing silence of

the twilight. . . . All the little cafés on the shore are lighted up with Chinese lanterns, and the Armenian and Greek women sit upon the crumbling parapets and smoke their cigarettes, and laugh aloud, and clap their hands, and call out to their friends in the boats, and are answered back, and so on and on we go, past Eyub, past Balata, and under the Second Bridge, the grand outline of Constantinople now standing out vividly in purest indigo against the splendid and slowly deepening shades of orange, which shall have faded down, before we land, to palest lemon colour." 1

Constantinople, to-day, is a great religious centre, it focuses the aims of the adherents of Mohammedanism, of Greek Orthodox and Armenians. It houses more than a million souls, and, like most cosmopolitan cities, has numerous industries which, hidden in its vastness, would make the reputation of a smaller town. Since the Great War, Turkey in Europe has almost disappeared and the Byzantine city is no longer the Turkish capital. Will it, like Vienna, survive as a great city by vis inertiae, or will it dwindle to the obscurity of a provincial city?

## 2. People

The Osmanli Turks, so called after Osman, the chieftain who led them during the first quarter of the fourteenth century, are a branch of the Ural-Altaic race so widely spread over central Asia. They have been dominant in the south-east of Europe since the fifteenth century, and established there since the fourteenth. But they have never formed a majority of the population; they do not even do so in what has been left of European

<sup>&</sup>lt;sup>1</sup> The Sultan and His Subjects, by Richard Davey (London, 1897), vol. ii. pp. 325-327.

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Turkey since the rearrangements brought about by the treaty of Berlin (1878), which withdrew from Turkish rule so many territories in which people of other races preponderated. The modern Turks are a political rather than an ethnographic unity. The original Turkish blood has generation after generation been so diluted with the blood of other races, that little of its pristine purity can be left. But their common creed is a powerful bond of union, as well as their historical traditions and their common interests as a race of conquerors.

In the kingdom of Bulgaria the Turks, who have withdrawn in large numbers since the war of liberation (1878), number but a fraction of the population. Those who remain are found for the most part north of the Balkans, and include many Tatars, who immigrated thither from the Crimea during the eighteenth and nineteenth centuries. From Bosnia and Herzegovina. formerly in Turkish hands, they have almost vanished, the population there being made up almost entirely of Serbs (Slavs). In general, they are most numerous in the provinces bordering on the Black Sea and the Ægean. Moreover, while other races in Turkey hold their ground, or even increase, the Osmanli are not only giving way numerically; they are actually losing their hold on the land. As the several provinces successively recovered their independence, the Turks, unable and unwilling to brook the political equality of those whom they have kept in servitude, withdrew, and sought those parts of the empire where their brothers in blood and creed are still unshackled masters. Thus the landed estates of the peninsula passed out of their hands in an increasing ratio. The diminution in their numbers is due to the excess of deaths over births. In fact, the Osmanli race in both Europe and Asia Minor seems, from many



ORTHODOX BOSNIAN PEASANTS.

## THE DARDANELLES





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evidences, to be in a condition of physical and economic decay. Constantinople is said to be, figuratively, overrun with a poverty-stricken proletariat—officials thrown out of occupation, landed proprietors brought to penury, fugitives from the emancipated provinces.

In spite of this, however, the best authorities are agreed that there is still a strong latent force in the broad mass of the Turkish people. For they have not yet lost those warlike characteristics which distinguished their formidable ancestors, who knocked more than once at the very gates of Vienna, and made all Europe tremble at their war-cry. The "common man" of the Turkish race is unpretentious, frugal, patient, physically of great endurance, and very honest. Apart from the officials and the army, the Turks are husbandmen, landowners, and artisans.

## 3. Adrianople and Eastern Thrace

Adrianople,¹ called by the Turks Edirne, was the first capital of the Turks in the Balkan Peninsula. In early times, as capital of one of the Thracian tribes, called Uskadama, it had its modern name bestowed upon it in honour of the emperor Hadrian, its second founder. It is the natural mistress of the Maritsa valley, and stands on the great Vienna-Constantinople road, at the point where it is crossed by the route which ascends the valley of the Maritsa and proceeds northwards up the valley of the Tunja into Bulgaria. The great road to Constantinople runs a short distance down the Maritsa, then traverses the valley of its tributary, the Ergene, and finally either strikes across to Rodosto (Tekir Dagh), on the Sea of Marmora, or winds across the bare, barren steppes which run right up to the walls of the capital. In summer,

<sup>&</sup>lt;sup>1</sup> (Adrianople), pop. (approx.), 71,000.

however, the prevalence of malaria in the low grounds of the Maritsa compels the choice of a more northerly route, skirting the foot of the Istranja Dagh. Adrianople is a centre for the manufacture of silk, though not on an extensive scale, and being at the head of navigation on the only navigable river that penetrates to the heart of Rumelia, it has a trade in otto (attar) of roses, opium, wine, and other commodities. It was near this city that the Goths won their final entry into the Eastern empire by their rout of the emperor Valens in 378.

The Thracian littoral is to be internationalised, as the freedom of the Straits must be ensured under all circumstances. The Thracian Chersonese or peninsula of Gallipoli, some 52 miles long by from 2 to 12 miles across, is a bare spine of rocky hills which rise in places to almost 1000 feet. Small sandy beaches and the bays of Suvla and Morto give limited access to these barren heights, which are valuable solely from their strategic position commanding the passage of the Dardanelles. The tiny harbour of Gallipoli, on the east coast, is connected with Kilid Bahr, the "Castle of Europe," by the only road in the peninsula.

Here, during 1915, the ill-starred Gallipoli Expedition obtained and held a precarious footing until finally evacuated with very slight loss, the only success of a disastrous episode.

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